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VOL. XXI.

ORNITHOLOGY.

GAME BIRDS.

BY THE EDITOR.

EDINBURGH:
W. H. LIZARS, 3, ST. JAMES' SQUARE;
S. HIGHLEY, 32, FLEET STREET, LONDON; AND
W. CURRY, JUN. AND CO., DUBLIN.
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SIR THOMAS STAMFORD RAFFLES.

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ORNITHOLOGY.

VOL. VIII.

Red Grouse.

EDINBURGH:
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LONDON: SAMUEL HIGHLEY 32 FLEET STREET.
DUBLIN: W. CURRY JUNR & CO.

THE

NATURAL HISTORY

OF

GAME-BIRDS.

ILLUSTRATED BY THIRTY-ONE PLATES, COLOURED;
WITH MEMOIR AND PORTRAIT OF
SIR T. STAMFORD RAFFLES.

BY

SIR WILLIAM JARDINE, BART.

F.R.S.E., F.L.S., ETC. ETC.

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In all Thirty-two Plates in this Volume.

MEMOIR

OF

SIR THOMAS STAMFORD RAFFLES.*

THE intention of these necessarily short memoirs being to sketch the character, and detail the labours, of those men who have advanced the science of Natural History, some passages will not be deemed inappropriate, which have been collected from the career of one, whose zeal for the advancement of this study was ever shewn, when a short leisure from the more important administration of his public duties would allow; and to whom the British Naturalist is indebted for a Zoological establishment, which has already rivalled the utility, and emulated the magnificence, of the Continental institutions.

The name of Sir T. STAMFORD RAFFLES is intimately connected with the political history of the East, and it is no less so with that of its natural pro-

* We are indebted to the kindness of Lady Raffles for permission to copy the portrait, from a bust by Chantrey, which accompanies her interesting history of the Life and public services of Sir Thomas Stamford Raffles.

ductions. It will now be our endeavour to review his discoveries and researches in the Natural History of these interesting countries, separated as far as possible from the details of his arduous and important public services. For this purpose we have been indebted chiefly to the interesting volume, published some years since under the superintendence of his amiable widow, and which has furnished those parts introduced from his correspondence, with the descriptions of his excursions in the interior of Sumatra; while the History of Java, and the various papers which Sir Thomas has himself published, have afforded materials for the other parts. In the progress of the sketch it will be seen that the researches of this naturalist were not confined to one branch of the science, but that every department, both of the history of the inhabitants of those islands, and their natural productions, were carefully studied. We have alluded to the different objects introduced, without any system or arrangement but as they seemed to have occurred to the notice of the individual. Some of them are well known by his own descriptions, or illustrate the beautiful works of his friends and companions in research and administration *; and but for the awful and overwhelming catastrophe which occurred on the eve of his departure, many an unknown production of that rich archipelago would have assisted in the embellishment of the extensive works which he contemplated. Having

* Horsfield, Wallich, &c.

thus detailed our plan, we have, before commencing, to entreat those friends by whom this imperfect sketch may be seen, that they will forgive any inaccuracies or misrepresentations; nor attribute to any motive except that of doing justice, whatever may be said of the character of an individual, whose writings had conveyed a very high impression, which was still farther confirmed by a short but lively remembered intercourse, for a few months previous to his untimely decease.

THOMAS STAMFORD RAFFLES, the son of Benjamin Raffles, one of the oldest Captains in the West India Trade, was born at sea on the 5th July 1781, off the harbour of Port Morant, in the Island of Jamaica. Little appears to be known of his family except its antiquity, and that its earlier members passed through life with unblemished reputation. Of his youth previous to the age of fourteen, when he entered into active business, few traits seem to have been recollected, beyond a sedateness of temper, and perseverance in his studies superior to that of his schoolfellows, with a vivid apprehension of the incidents which occurred. During this period he studied under the charge of Dr Anderson, who kept a respectable academy near Hammersmith; and, at the early age we have mentioned, he was placed as an extra clerk in the East India House.

When we consider the very short portion of his early life, wherein he could regularly gain the rudi-

ments of a common education, we must be surprised at the variety of acquirements which he afterwards displayed, or rather, perhaps, at the industry by which they were attained. During his sedentary occupation as a clerk, he employed his leisure in attending to several branches of literature, and he obtained a tolerable knowledge of French, which a retentive memory enabled him to retain, and afterwards to use with much advantage, in his various duties of diplomacy. His power of acquiring languages was great, and in his after engagements gave him advantages and influence over the native powers of the East, which could not have been obtained unless by a free intercourse, and which a knowledge of their language could only give.

This very close application to business and study, however, excited symptoms of disease in a frame and constitution never very robust, and alarmed his friends for his health. Relaxation was recommended, and he employed a short leave of absence, by making a pedestrian excursion through Wales, which, while it gave him renewed strength, gave him also information of the mining districts, which was afterwards of advantage to his researches in Java.

It would scarcely have been expected that a young man, placed in so apparently friendless a situation, should have made to himself patrons. A friend had, however, marked him and upon the occurrence of a vacancy in the establishment of the East India House, the appointment was given to the young and studi-

ous Raffles, in preference to many who were thought at least to have possessed more interest. In 1805 the Directors determined upon sending out an establishment to Penang; and Mr Ramsay, then secretary, having observed his talents for diplomacy, his application, and his quickness, recommended him to the office of assistant secretary. In September following Mr Raffles first set foot in the East, the theatre in which his acquirements and industry were to be shown forth. During the voyage out he had nearly mastered the Malayan language; and, from the illness of the secretary, he was at once obliged to enter upon all the duties and difficulties of his office, a task of great responsibility, but which he executed to the satisfaction of his employers.

The great exertions and application necessary to carry on the duties of the government, with the effects of the climate on a constitution not yet inured to it, were too much for Mr Raffles, and he was thrown into bad health, and an illness so serious, that relaxation and change of air to Malacca were recommended. Hence his anxiety to benefit the government brought him back almost before he was able to undergo fatigue. He made the voyage in the long boat of an Indiaman, and again reached Penang in time to send off despatches, and to forward many objects which could scarcely have been accomplished without him.

While at Malacca he first saw and mixed with the varied population of the Eastern Archipelago,

heard the dialects, and became interested in their origin; and to this singularity and variety may be attributed the first desire to investigate the history and antiquities of this people. In these pursuits he was assisted by the researches which now occupied Mr Marsden, whose constant application upon the occurrence of difficulties, and innumerable queries, forced and kept up the interest of a subject to which he was already deeply attached. It was at Malacca, also, where he first gained the acquaintance and friendship of Dr Leyden.

About this period the affairs of the East were in considerable confusion. The conquest of Java was contemplated, and there was little time to be spared for the pursuits of literature, researches into the antiquities of the country, or into its natural history. The stolen moments which could be spared, were, however, all devoted to these studies, and the very information which was to be acquired in forwarding the objects of the government, increased his knowledge, and laid the basis for many of his after discoveries. As, however, we wish to avoid the details of his political career, we shall pass over the period until the capture of Java; suffice it to say, that he exhibited as much perseverance and presence of mind in the diplomatist and soldier, as he had before in the more peaceful researches of antiquities and literature.

The capture of Java was terminated in 1811, and by all, much of the merit of planning and conduct-

ing the expedition is attributed to Mr Raffles. The services which he had performed were so highly judged of by Lord Minto,—the performance of any trust to be reposed in him was so confidently anticipated—that he at once appointed Mr Raffles Lieutenant-Governor of Java and its dependencies. "The charge was of the most extensive, arduous, and responsible nature, comprising on the island of Java alone, a population of six millions, divided into thirty-six residencies, under powerful chiefs, who had long been desirous of throwing off the European yoke, and who were by no means disposed to submit quietly to the rule of their new governors."

Lord Minto remained in the island for six weeks superintending the new arrangements, after which the whole charges were resigned to the care of Mr Raffles, who now removed to Buitenzorg, the seat of government, distant from Batavia about forty miles. For some time his cares and duties were so heavy, that every moment was required for their fulfilment, but ere long the pursuits of natural history and antiquities began to fill his moments of leisure. In a letter to his first and old friend Mr Ramsay, written in the same year with his establishment in the government, after mentioning the surmounting of several difficulties, he says, "By the next opportunity I shall have the satisfaction of forwarding to the authorities in England, several reports from Dr Horsfield, and other scientific gentlemen, on the natural history of the island; and as the Batavian

Literary Society have solicited that I should take that institution under the protection of government, I trust that by uniting our efforts with those of the Asiatic Society in Bengal, very considerable light may be shortly thrown on science and general knowledge. The numerous remains of Brahminical structures in every part of the island, prove beyond a doubt, that a colony of Hindus settled on this island about the first century of the Christian era; and the materials of which they are constructed, induce the belief that this colony must have emigrated from the Coromandel coast. The beauty and purity of these structures are entirely divested of 'that redundancy of awkward and uncouth ornaments and symbols which are found in India." His time was thus constantly occupied either in official employments or literary researches. In the latter he was assisted by the talents of Dr Horsfield, and together they accomplished one of the most important measures for promoting their researches,—the re-establishment of the Society of Arts at Batavia, of which Mr Raffles was appointed president. This had been the first Eastern Literary Society established by Europeans, and under his fostering care it revived, and was of much consequence to the history of these countries, during the few short years which they remained under the sway of the British arms, and the superintendence of an active and enlightened governor.

A short notice of the rise of a society of such consequence in the East, and so intimately connect-

ed with the history of its natural productions, may not here be misplaced, particularly as we are obliged for it to the address of its President upon his first instalment in office after its re-establishment. "Previous to the establishment of the Batavian Society, Mr Kadermacher, a gentleman of distinguished talents, and a zealous promoter of the Christian religion and of science, with a few friends of Batavia, conceived the idea of assembling together a number of persons of consideration and ability, with the view of encouraging the arts and sciences in this capital, and the other Indian establishments then dependent on Holland. They considered that in India, as in Europe, where for two centuries the reformation in letters preceded that in religion, a taste for the arts and sciences must be introduced previously to the general adoption of the Christian religion in the East; but they were aware of the difficulties to be encountered, under the circumstances in which the colonies of Holland were then placed, and a considerable period elapsed before the design was carried into effect.

"At length, in the year 1777, when Mr Kadermacher and his father-in-law, the Governor-General de Klerk, were newly elected directors of the Haerlem Society, a programme appeared, which contained the plan of extending the branches of that Society to the Indies. The distance and extent of the Dutch colonial possessions in the East did not, however, admit of this plan being realized; but the idea

being thus brought forward to public notice, a separate society was formed, by the unremitting perseverance of Mr Kadermacher, who may be called the founder of the institution established at Batavia.

"On the 24th of April 1778, this society was duly established, under the authority of Government, and, after the example of Haerlem, took for its motto, '*The public utility.*' On its first organization, the Society consisted of 192 members, the Governor-General being chief director, and members of the High Regency directors. The Society selected as objects of research and inquiry, whatever could be useful to agriculture, commerce, and the welfare of the colony; it encouraged every question relating to natural history, antiquities, and the manners and usages of the native inhabitants: and in order the better to define the objects and contribute to their accomplishment, a programme was from time to time printed and circulated abroad."

The Society was no sooner fully established, and its proceedings generally known, than it received from all quarters various acquisitions to its cabinet and library. Mr Kadermacher himself presented the Society with a convenient house, and eight cases of valuable books, &c.; and by the liberality of Mr Bartto, it was enabled to form a botanical establishment, in a garden presented by that gentleman. In 1779 the first volume of transactions was printed, in 1780 the second, and the third in 1781; and before 1792 six volumes had appeared. At this pe-

riod the revolutions and war in Europe interfered with the interests of the Society; it was found impracticable to complete the seventh volume, and it was suggested that, by adopting a more limited mode of proceeding, the views of the Society might still be forwarded. The Society was placed under this new organization in 1800, and continued in this state until the change of government in 1811, when its interests were again actively taken up, in the manner we have just seen, by Mr Raffles.

In each succeeding year a new address was delivered by the president, giving a review and account of the progress of the different inquiries which had come under the notice of the Society, and of discoveries which had been made. These all shew the uncommon pains taken by Mr Raffles in promoting its objects, but would occupy too much room in our present sketch, and could not be done justice to by mutilation.

During the last few years which the island of Java remained in possession of the British, Mr Raffles remained in much uncertainty, and often felt considerable difficulties in giving his orders. It was unknown whether the island was to be given up to the Dutch, to be kept under the British crown, or continue in the hands of the Company. In any change, however, it was possible that Mr Raffles might be superseded and lose the advantages which he was now reaping in his high and important situation. He was however prevented from suffering, by

the kind attentions of his patron Lord Minto, who, before leaving the East to his successor Lord Moira, procured for him the residency of Fort Marlborough, which gave him the chief rank at Bencoolen *. Before his settlement, however, in this new residency, many vicissitudes of his lot occurred, and we have particularly to notice one incident, the first which had affected or had appeared to place any blot upon the bright character and fame of Mr Raffles.

Though at first intimate friends, and acting apparently in concert for the interest of the Eastern islands, some differences of opinion had existed between Mr Raffles and General Gillespie; and after the appointment of the former gentleman to the governorship, the breach seems to have widened. Some acts of administration were complained of, which ended in specific charges being made by the General to the Bengal Government, by whom they were forwarded to Mr Raffles for reply. These charges coming somewhat unexpectedly and perfectly unmeritedly, were deeply felt. Writing to Lord Minto regarding their want of foundation, he says, "My feelings of the injury I have sustained are not the less acute that I have been denied the means of knowing the charges, until all the influence of a first and ex-parte statement could be exerted, and the current of public feeling allowed to flow unrestrained, until the reports obtained an unmerited credit from the very want of contradiction;" but he adds, in con-

* The Commander of the Troops at the reduction of Java.

fidence of his fidelity, "My cause, my honour, my public reputation and private character are now before the supreme government, and I only ask a patient hearing. Errors in judgment may be found in the complicated administration with which I am entrusted; measures of policy depend in a considerable degree on opinion, and there may be some difference of opinion perhaps, with regard to those which have been adopted by this government; but the accusations against my moral character must be determined by facts, and on this ground I will challenge my accusers to produce any one act of government, in which I have been actuated by corrupt motives, or guided by views of sinister advantage to myself."

In addition to the feelings of a character undeservedly attacked, were now added those of deep affliction in the loss of his dearest connections. Soon after the delivery of the charges, he suffered a severe bereavement in the death of Mrs Raffles, which was followed by the intelligence of the decease of Lord Minto, to whom he might be said to be indebted for all his worldly prosperity, besides the free intercourse and sympathy of friendship. He had, however, on receipt of the charges, and immediately before these great losses, written out replies, which, though they could not, after the institution of the proceedings by General Gillespie, be taken as exculpation, shewed plainly to his judges that little was to be dreaded in Mr Raffles, from a double or

deceitful government. But the afflictions which had thus multiplied upon him, so affected his health that a change of scene was necessary, and the tour of the island was commenced with the view to his recovery, and the employment of his mind in the examination of various subjects in which he was much interested. These exertions, however, though they occupied his mind for the time, did not add to his health or general strength, and he removed to Ciceroa in a more upland district, in the hope that the purer air might assist his constitution; but here also the weakening symptoms continued, and here it was that he heard he was superseded in his government. In this act he felt himself unjustly used, but he bore it with firmness, and without experiencing the bad effects which his medical advisers anticipated. These attempts, by change of air and scene, to recover health were, however, unavailing, and it was judged necessary that he should return to England as the only hope of restoring his constitution. This proposal he would not listen to, until the arrival of the new governor; for he felt, that, however aggrieved he might have been, his successor Mr Tindal had nothing to do with it, and it was his duty to see every attention and honour paid to him upon his arrival. Perhaps, also, feelings for the interests of his old friends and companions in office had their sway, for his benevolent disposition would have made any sacrifice for those in whom he was interested, and whom he knew deserved his assistance; while his patriotic

love for Java, and desire for the welfare of the natives, were points which assumed an interest of no ordinary kind. He accordingly remained until the arrival of Mr Tindal, introduced him to Buitenzorg, to his own officers and staff, and to the most worthy inhabitants in the island; doing every thing in his power to render the situation of his successor agreeable, and to bend his views to the importance of the prosperity and improvement of the natives. Having done this, he resigned his office, and retired to the house of Mr Cronsent with whom he remained until his embarkation.

When it became known that Mr Raffles had decided upon returning to England, the liveliest demonstrations of regret were exhibited by the population, both European and native. Addresses were presented, accompanied with substantial presents, and a sincerity in their grief was shewn, which told plainly that it was the language of their hearts. A passage to England was engaged in the ship Ganges, Captain Travers; and, says his biographer, "On the morning of Mr Raffles' embarkation, the roads of Batavia were filled with boats, crowded with people of various nations, all anxious to pay the last tribute of respect within their power to one for whom they entertained the most lively affection. On reaching the vessel, he found the decks filled with offerings of every description—fruit, flowers, poultry, whatever they thought would promote his comfort on the voyage. It is impossible to describe

the scene which took place when the order was given to weigh anchor; the people felt that they had lost the greatest friend whom Java ever possessed; and perhaps they anticipated, as too near, their redelivery to the Dutch power, and the consequently too probable renewal of the scenes of misgovernment, from which, under the administration of Mr Raffles, they had been relieved for five years."

After a prosperous voyage, Mr Raffles reached London, on the 16th July 1816, and next morning reported himself to the Directors of the East India House.

He immediately addressed the Directors, praying for a revision of his services in Java, and a decision upon the charges which had been brought against him by General Gillespie; but still an opinion upon his government was refused, qualified, however, with the expression of their conviction that they "had sprung from motives perfectly correct." But notwithstanding that they did not think it proper thus publicly or officially to express their opinion of his administration, in a short period he was rewarded with as open an acknowledgment of it as could well be made. It may be recollected that the residency of Bencoolen had been secured to Mr Raffles by the kindness of Lord Minto. The court of Directors, on his departing again for the East, and upon his regular instalment into his new office, thus expressed themselves:—"The Directors, in consideration of the zeal and talents displayed during the period he

filled the office of lieutenant-governor of Java, conferred upon him the title of Lieutenant-governor of Bencoolen, as a peculiar mark of the favourable sentiments which the court entertained of his merits and services;" and thus they washed away every imputation which could have previously affected his character or administration.

During his residence in England, Mr Raffle gained additional friends, and formed new attachments; he regained his former health, and early in the year of his arrival married Sophia, the daughter of Mr Hull, an Irish gentleman. His leisure was occupied in writing his History of Java, of which we shall afterwards speak; and upon presenting it to his Majesty George IV., (at that time Prince Regent), he received the honour of knighthood. He visited also the continent, and ever anxious for the welfare of his favourite Java, which had now been given up to the Dutch, he travelled through Holland, and had several interviews with the Dutch king, hoping to influence him in a line of administration which might at once be most advantageous to his government, and favourable for the native inhabitants and the prosperity of the island. He examined all the continental collections, many of them richer than those in this country, with the view of improving his knowledge before again returning to India. Even at this time, he contemplated the possibility of an establishment similar to the Garden of Plants in Paris, and which he seems never to have lost sight of, until its

actual institution, several years afterwards, under his auspices, as the Zoological Society of London.

In November 1817 Sir Stamford Raffles, accompanied by his lady, sailed for his new residency, and, after a tedious voyage, arrived safely at Bencoolen. The condition of this establishment at the time of his arrival must have been very desolate. In a letter to Mr Marsden, he thus describes their uncomfortable situation:—"This is without exception the most wretched place I ever beheld. I cannot convey to you an adequate idea of the state of ruin and dilapidation which surrounds me. What with natural impediments, bad government, and the awful visitations of providence, which we have recently experienced in repeated earthquakes, we have scarcely a dwelling in which to lay our heads, or wherewithal to satisfy the cravings of nature. The roads are impassable; the highways in the town overrun with rank grass; the government-house a den of ravenous dogs and polecats." The administration seemed to have been little better; a listless idleness had taken hold of the native inhabitants, gaming and cockfighting prevailed, and the Malayan character was exhibited in its very worst aspect; while the murder of Mr Parr, a former resident, had given rise to complete distrust among the European inhabitants;—"an appearance of general desolation appeared."

By the energy and prudent measures adopted without delay by Sir Stamford, the aspect of affairs and of the country became soon improved, and confidence to a certain extent was restored between

both the native and European population. To pursue this object still farther, it was necessary that a general knowledge of the island should be obtained, and Sir Stamford resolved to make some excursions to the interior. Accounts of these he has given in a series of letters to his friends; and as they contain much interesting information regarding the natural history of the island and its productions, we shall here notice some of the more important discoveries which were made.

The first excursion extended only to the nearest range of hills which had not previously been visited by Europeans; and on a part of the range, "The Hill of Mists," he selected a situation for a country residence, not very favourable, if we may judge from the name, but it commanded an extensive view of the lower country, and was subjected to a less degree of heat. The second was to the southern residencies, and the Passumah country, and is remarkable for the discovery of the gigantic parasitic flower, destined to hand to posterity the names of its discoverers—Rafflesia Arnoldi.*

"On the next morning, at half-past five, we commenced our journey towards Passumah on foot, the party consisting of myself, Lady Raffles, Dr Arnold, and Mr Presgrove, the resident at Manna, with six native officers, and about fifty coolies (porters), carrying our food and baggage. Our journey lay near

* Dr Arnold, who accompanied Sir Stamford in many of his excursions, but lately fell a victim to the climate.

the banks of the river during the whole day, but frequently over high cliffs, and almost entirely through thick forest. On approaching Lebu Tappu, where a village once stood, we fell in with the tracks of elephants. They were very numerous, and it was evident they had only preceded us a short time. We here passed over much ground, which at one period must have been in cultivation, but which had long been in a state of nature. After breakfasting at Lebu Tappu, under the shade of the largest tree we could find, we proceeded on to a place called Pulolebar, where we were to sleep. This also had been the site of a village, but no trace of human dwelling or cultivation was to be found; we reached it at half-past four in the afternoon, having walked for upwards of eight hours. We immediately set to work and erected two or three sheds to sleep in, collecting the materials from the vegetation around us. The river here was broad but very rocky; the scenery highly romantic and beautiful. During the night we were awakened by the approach of a party of elephants, who seemed auxious to inquire our business within their domains. Fortunately they kept at some distance, and allowed us to remain unmolested. The natives fancy that there are two kinds of elephants—the Gaja bermakpong, those which always go in herds, and which are seldom mischievous, and the Gaja salunggal, or single elephants, which are much larger and ferocious, going about either singly or only two or three in company. It is

probable the latter kind are only the full grown males.

"I must not omit to tell you, that, in passing through the forest, we were, much to our inconvenience, greatly annoyed by leeches; they got into our boots and shoes, which became filled with blood. At night, too, they fell off the leaves that sheltered us from the weather, and on awaking in the morning we found ourselves bleeding profusely. These were a species of intruders we were not prepared for.

"The most important discovery throughout our journey was made at this place. This was a gigantic flower, of which I can hardly attempt to give any thing like a just description. It is perhaps the largest and most magnificent flower in the world, and is so distinct from every other flower, that I know not to what I can compare it. Its dimensions will astonish you; it measured across from the extremity of the petals rather more than a yard; the nectarium was nine inches wide, and as deep, estimated to contain a gallon and a half of water, and the weight of the whole flower fifteen pounds.

"The Sumatra name of this extraordinary production is Petiman Sikinlili, or Devil's-siri (betle) box. It is a native of the forests, particularly those of Passumah, Ula, Manna.

"This gigantic flower is parasite on the lower stems and roots of the Cissus angustifolia of Bosc. It appears at first in the form of a small round knob, which gradually increases in size The flower-bud

is inserted by numerous membranaceous sheaths which surround it in successive layers, and expand as the bud enlarges, until at length they form a cup round its base. These sheaths or bracts are large, round, concave, of a firm membranaceous consistence, and of a brown colour. The bud before expansion is depressed, round, with five obtuse angles, nearly a foot in diameter, and of a deep dusky red. The flower, when fully expanded, is, in point of size, the wonder of the vegetable kingdom; the breadth across, from the top of the one petal to the top of the other, is three feet. The cup may be estimated capable of containing twelve pints, and the weight of the whole is from twelve to fifteen pounds. The inside of the cup is of an intense purple, and more or less densely yellow, with soft flexible spines of the same colour. Towards the mouth, it is marked with numerous depressed spots of the purest white, contrasting strongly with the purple of the surrounding substance, which is considerably elevated on the lower side. The petals are of a brick-red, with numerous pustular spots of a lighter colour. The whole substance of the flower is not less than half an inch thick, and of a firm fleshy consistence. It soon after expansion begins to give out a smell of decaying animal matter. The fruit never bursts, but the whole plant gradually rots away, and the seeds mix with the putrid mass.

"There is nothing more striking in the Malayan forests, than the grandeur of the vegetation. The

magnitude of the flowers, creepers, and trees, contrasts strikingly with the stunted, and, I had almost said, pigmy vegetation of England. Compared with our fruit-trees, your largest oak is a mere dwarf. Here we have creepers and vines entwining larger trees, and hanging suspended for more than 100 feet, in girth not less than a man's body, and many much thicker; the trees seldom under 100, and generally approaching 160 to 200 feet in height.

"From Pulo Laber we started at half-past five, and halted at eight to breakfast. At eleven we reached the Sindangaré river, where we took some refreshment, and in the evening, about half-past five, reached Barong Rasam.

"The day's journey was most fatiguing, and not less than thirty miles, entirely through a thick forest, and over stupendous mountains, one of which, called the Sindangan mountain, could not have been less than between 4000 and 5000 feet high. Neither on this nor on the preceding day was there vestige of population or cultivation; nature was throughout allowed to reign undisturbed, and from the traces of elephants in every direction, they alone, of the animal kingdom, seemed to have explored the recesses of the forest.

"We got on, however, very well; and though we were all occasionally much fatigued, we did not complain. Lady Raffles was a perfect heroine. The only misfortune at this stage was a heavy fall of rain during the night, which penetrated our leafy dwell-

ing in every direction, and soaked every one of the party to the skin. We were now two days' march beyond the reach of supplies; many of our coolies had dropped off; some were fairly exhausted, and we began to wish our journey at an end. We, however, contrived to make a good dinner on the remaining fowl, and having plenty of rice and claret, did not complain of our fare.

"On the next morning we started in better spirits, having been met by one of the chiefs of Passumah, who came to welcome our approach, and to assure us if we walked on foot we should reach a village in the afternoon. For the first part of the day, our route was still over stupendous mountains, sometimes in the beds of rivers for miles, and at all times difficult; but about noon we came into a country that had once been cleared, and again fell in with the Manna River, which we crossed on a raft previously prepared for the purpose, many of the chiefs and people of Passumah having assembled to meet us. We had still, however, a very steep ascent to encounter; but no sooner had we attained the summit, and bent our steps downwards, than our view opened upon one of the finest countries I ever beheld, amply compensating us for all the dreariness of the forest, and for all the fatigues we had undergone; perhaps the prospect was heightened by the contrast, but the country I now beheld reminded me so much of scenes in Java, and was in every respect so different to that on the coast, that I could not help ex-

pressing myself in raptures. As we descended, the scene improved; we found ourselves in an immense amphitheatre, surrounded by mountains ten and twelve thousand feet high; the soil on which we stood rich beyond description, and vegetation luxuriant and brilliant in every direction. The people, too, seemed a new race, far superior to those on the coast, tall, stout, and ingenuous. They received us most hospitably, and conducted us to the village of Nigri-Cayu, where we slept.

"In the vicinity of Nigri-Cayu, were several hot springs, and we soon succeeded in making very comfortable warm baths.

"On the next day we proceeded to Taujong Alem (the point of the world), another village in the Passumah country, which we reached in about six hours' walk, through one of the finest countries in the world, having before us nearly the whole way the volcanic mountain called Gunung Dempu, from which the smoke issued in large volumes.

"At Tanjung Alem, we remained two nights. We found the villages in this part of the country most respectable, many of them having more than five hundred inhabitants; the houses large, and on a different plan to those on the coast; each village, which may rather be considered as a small town, has a fosse or ditch round it, with high palisades. We passed the site of two or three towns, which were represented to have been destroyed by the petty hostilities between the chiefs.

"The people, though professedly Mahomedans, seem more attached to their ancient worship and superstitions than I expected. I clearly traced an ancient mythology, and obtained the names of at least twenty gods, several of whom are Hindus. In each of the villages we found a Lang'gar, similar to that noticed at Merambung, but generally better constructed.

"The utmost good-humour and affection seemed to exist among the people of the village; they were as one family, the men walking about holding each other by the hand, and playing tricks with each other like children. They were as fine a race as I ever beheld; in general about six feet high, and proportionably stout, clear and clean skins, and an open ingenuous countenance. They seemed to have abundance of every thing; rice, the staple food of the country, being five times as cheap as at Bencoolen, and every other article of produce in proportion. The women and children were decorated with a profusion of silver ornaments, and particularly with strings of dollars and other coins, hanging two or three deep round the neck. It was not uncommon to see a child with a hundred dollars round her neck. Every one seemed anxious for medicine, and they cheerfully agreed to be vaccinated. The small-pox had latterly committed great ravages, and the population of whole villages had fled into the woods to avoid the contagion.

"We now thought of returning to the coast, and

on the 25th set off for Manna by a different route to that by which we had arrived. Our first day's journey was to Camumuan, which we reached a little before six in the evening, after the hardest day's walk I ever experienced. We calculated that we had walked more than thirty miles, and over the worst of roads. Hitherto we had been fortunate in our weather; but before we reached this place, a heavy rain came on, and soaked us completely. The baggage only came up in part, and we were content to sleep in our wet clothes, under the best shade we could find. No wood would burn; there was no moon; it was already dark, and we had no shelter erected: By perseverance, however, I made a tolerable place for Lady Raffles, and, after selecting the smoothest stone I could find in the bed of a river for a pillow, we managed to pass a tolerably comfortable night. This is what is here called the Ula Pino road; and we were encouraged to undertake long marches, in the hope of only sleeping in the woods one night, and in this we fortunately succeeded.

"The next day we reached Merambung, where we got upon a raft, and were wafted down to the vicinity of Manna in about seven hours. The passage down the river was extremely romantic and grand; it is one of the most rapid rivers on the coast: we descended a rapid almost every hundred yards.

"After proceeding from Manna to Cawoor, we returned by the coast to Bencoolen, where we ar-

rived on the 3d of June, to the no small astonishment of the colonists, who were not inclined to believe it possible we could have thought of such a journey."

The party having thus returned in safety to Bencoolen, the attention of Sir Stamford was occupied for a month in the concerns of the Company; but he contemplated other excursions, and, in July 1818, commenced his inquiries regarding the ancient Malayan city, Menangkabu, celebrated for the richness of its ores and mineral productions. He embarked for Padang, accompanied as formerly by Lady Raffles, having upon the journey also the company and assistance of Dr Horsfield. The journal of this expedition, written at the time of its execution, and sent home to his friends, is extremely interesting, but, from its length, would occupy too much space here; we have therefore only selected some parts of it.

The difficulties of the way were much dwelt on by the natives. Sir Stamford was, however, determined to make the attempt, though the information of his advanced party was rather confirmatory of danger. "This party, consisting of about two hundred coolies, fifty military as an escort, and all our personal servants, left Padong on the afternoon of the 14th June, by beat of drum, forming a most ridiculous cavalcade, the interest heightened by the quixotic appearance of my friend Dr Horsfield, who was borne along on the shoulders of four of the party, in order that, in preceding us, he might gain time for botanizing.

Thursday the 16th, at day break, was fixed for our departure.

"Next day was favourable, and the attempt was made. Dr Horsfield and his party were soon overtaken. At first the route lay along rich plains of rice fields, fine soils, and the country intersected with numerous streams, every indication of an extensive and industrious population; sheds erected for the accommodation of travellers, at convenient distances, with an occasional trace of a road. They reached the village of Leman Manis, "a long straggling village, or rather plantation, on the romantic banks of a rapid river, which discharges itself into the sea at Ujung Karang, and up the stream of which our farther course lay; here, as in several villages we had passed, we observed a considerable quantity of coffee growing under the shade of the large fruit trees, and contiguous to the houses. Our arrival was welcomed by the beating of the great drum or tabu, which has a place in every village. The drum is peculiar; it is formed of the trunk of a large tree, and is at least twenty feet long, hollowed out, and suspended on a wooden frame, lying horizontally under a shed; one end only is covered with parchment."

So far they accomplished the journey without much difficulty, using the acommodations of the native travellers. Their course continued along the bed of the river, a bad substitute for a turnpike, but almost the only passage in these wild but beautiful districts. Their ascent was much steeper, the road

more difficult. "Rocks piled on rocks, in sublime confusion; roaring cataracts, and slippery precipices were now to be surmounted. Nothing could be more romantic and wild than the course we had to pass." After a laborious day, however, they succeeded in crossing Gunung Dinjin, a high steep mountain, and encamped for the night on the confines of the Tiga-blas country, in view of the western peak of Berapi, emitting a volume of smoke. Here the party became under the control of the chiefs of the country, and it depended entirely on their inclinations whether strangers should be allowed to pass. After much consultation among those who next morning assembled, among delays and prevarications as to the reason of them, the restraint was broken through by the energy of Sir Stamford, and the party allowed to proceed, upon the payment of twenty dollars. Then "we shook hands, and the utmost cordiality and good understanding instantly prevailed." They descended to the plains, attended with several thousands, who now welcomed them in the most savage manner, with yells and cheers Having reached the principal town, they were, after some delay and consultation, supplied with a commodious planked house, and spent the night with sufficient comfort, keeping, however, the party together, and strict vigilance, necessary among so numerous a people; who openly shewed such wild and untamed manners.

This valley was of the richest description. "Here,"

writes Sir Stamford, "I was prepared to find a country still more fertile and populous than the fertile valley of Passumah. The whole occupied by the Tigas-blas-cotas, or thirteen confederate towns, is one sheet of cultivation, in breadth about ten, in length twenty, miles, thickly studded with towns and villages. On the slopes of the hills, the principal cultivation is coffee, indigo, maize, sugar-cane, and oil-giving plants; on the plain below, exclusively rice. A fine breed of small cattle, which seems peculiar, abounds here, and throughout the Menangkabu country; oxen seem generally used in agriculture, in preference to buffaloes; they are in general about three feet four inches high, beautifully made, and mostly of a light fawn colour, with black eyes and lashes, and are sold at from three to four dollars a-head. They are, without exception, the most beautiful little animals of the kind I ever beheld; we did not see one in bad condition. Horses, of which there seems to be plenty, are not much used. For a mare and foal, the price was about twenty shillings."

Thus they travelled on through a country little known to Europeans, of the most important and interesting description, full of interest to the antiquary and naturalist,—the classic ground of the Malays. On the night of the 21st, they reached the banks of Danau, or lake of Sincara, a beautiful sheet of water about fourteen miles long, and seven broad, surrounded with mountains and hills, highly cultivated at the bases, and open only towards the Tiga-blas

country, where a plain of its own breadth gradually sinks into its bosom. On the morning following, they embarked and reached a town of some consequence, Simawang, occupying the summit of a hill about 500 feet above the level of the lake, and commanding a very extensive prospect. The next morning they proceeded to Suruasa, the second city of importance, and, by mid-day, obtained the first view of Pageauyong, the capital of the Menangkabu country, and one of the objects of the excursion.

From the approach to these cities which had been thus passed, it was evident that, at one period, they had been of importance. "But, alas, little was left for our curiosity but the wreck of what had once been great and populous. The Wagarin trees, which shaded and added solemnity to the palace, were still standing in all their majesty. The fruit trees, and particularly the cocoa nut, marked the boundaries of this once extensive city; but the rank grass had usurped the halls of the palace, and scarce was the thatch of the peasant to be found. Three times had the city been committed to the flames; well might I say, in the language of the Brata Yudha, 'Sad and melancholy was her wagarin tree, like the sorrow of a wife whose husband is afar.'" Several interesting inscriptions were discovered here, and a chastely carved Hindu image, which, together with the very high state of cultivation in the surrounding country, were strong arguments in favour of the opinion formed by Sir Stamford, that the Malayan empire was not

of recent origin. Early next morning the party proceeded to the capital, which we shall notice in the narrator's own words. "In approaching Pageruyong, we had an excellent view of this once famous city. It is built at the foot, and partly on the slope of a steep and rugged hill, called Gunung Bongso, so memorable for its appearance, and the three peaks it exhibits. Below the town, under a precipice of from fifty to a hundred feet, in some parts nearly perpendicular, winds the beautiful stream of Selo, which pursuing its course, passes Saruasa, where it takes the name of the Golden River, and finally falls into the Indragiri. In front of the city rises the mountain Berapi, the summit of which may be about twenty miles distant. It is on the slopes of this mountain that the principal population is settled; the whole side of the mountain, for about fifteen miles from Pageruyong in every direction, being covered with villages and rice fields. The entrance to the city, which is now only marked by a few venerable trees, and the traces of what was once a highway, is nearly three quarters of a mile before we come to the Bali and site of the former palace. Here, little is left save the noble Wagarin trees, and these appear, in several instances, to have suffered from the action of fire. Scarcely the appearance of a hut is to be seen; the large flat stone, however, on which the Sultan used to sit on days of public ceremony, was pointed out to us; and when the weeds had been partially cleared, the royal burial ground was disco-

vered. In this we did not discover any inscription in the ancient character, but the ground was but very partially and hastily examined. We were struck, however, with the sculpture of later days, the memorials of the dead raised in Mahommedan times, on a small scale, but beautifully executed."

"This city had shared the same fate with that of Saruasa. Three times had it been committed to the flames; twice had it risen to something like splendour; from the last shock it had not yet recovered. Where the palace of the Sultan had stood, I observed a man planting cucumbers, and the sugar cane occupied the place of the seraglio. The whole country from Pageruyong, as far as the eye could distinctly trace, was one continued scene of cultivation, interspersed with innumerable towns and villages, shaded by the cocoa nut and other fruit trees. I may safely say, that this view equalled any thing I ever saw in Java. The scenery is more majestic and grand, population equally dense,—cultivation equally rich. Here, then, for the first time, was I able to trace the source of that power, the origin of that nation so extensively scattered over the Eastern Archipelago." From this interesting city and fine country, the party commenced their return, and reached Padang, after an absence of fourteen days.

Sir Stamford again arrived at Bencoolen, commenced his official occupations with his wonted energy,—visited Calcutta and many of the neighbouring islands. In most of these excursions he was

accompanied by Lady Raffles, who entered warmly into his pursuits, and delighted in exploring those fairy isles, the lands of eastern fable and magnificence, celebrated by all mariners as the most gorgeous water scenery in the world :—

"So strong the influence of the fairy scene."

"It is impossible," writes Lady Raffles, "to convey an idea of the pleasure of sailing through this beautiful and unparalleled Archipelago, in which every attraction of nature is combined. The smoothness of the sea, the lightness of the atmosphere, the constant succession of the most picturesque lake scenery; islands of every shape and size clustered together; mountains of the most fanciful forms crowned with verdure to their summit; rich and luxuriant vegetation extending to the very edge of the water; little native boats with only one person in them, contiuually darting out from the deep shade which concealed them, looking like so many cockle shells wafted about by the wind. Altogether, it is a scene of enchantment deserving a poet's pen to describe its beauties."

With the sanction of the government of the India House, Sir Stamford had now in his employment a regular establishment of naturalists and draughtsmen, at the head of which were two French naturalists, Messrs Diard and Duvaucel, who, in addition to their knowledge in preparing specimens, added acquirements in science of no ordinary kind. They were

both brought up in the Parisian school of the Garden of Plants, and to their discoveries, after the termination of their agreement with Sir Stamford, we are indebted for several new and curious productions. Nearly at this period, Sir Stamford's discoveries in Zoology were published in the Transactions of the Linnean Society; among these may be mentioned the Ursus Malayanus, forming the Genus Helarctos of Horsfield; the Felis macrocelis, or Rimau dahan; the Viverra gymnura, which Messrs Vigors and Horsfield afterwards dedicated to its discoverer under the title of Gymnura Rafflesii; several very interesting quadrumanous animals, and the Indian Tapir. In tracing out these animals, great difficulty often arose; they inhabited the interior, and the first indication of them was perhaps some rude hint or native description; thus, Sir Stamford was of opinion that another large tapir-looking animal inhabited the forests, with a narrow riband of white round the back and belly; the description was simply, that the band is narrow, head truncated, the tail long; and they had to be sought for and obtained in districts, little, if ever, visited, and where there was often a superstitious dread, which no persuasion or temptation could overcome. Among the rarer birds, we are also indebted to these researches for Eurylamus, Calyptomena, &c. All these were proposed to have been illustrated in a work entitled Museum Rafflesianum, but which we fear has not reached a step farther than its contemplation.

As time wore on, the occupations of office became less engrossing. The long time spent in passing from Calcutta to Bencoolen, in matters connected with government, and the permanent establishment and prosperous condition of Singapore, left little more to be accomplished: a return to Europe was contemplated, and the arrangement and description of his immense collections looked forward to. At Bencoolen, Sir Stamford lived in comparative retirement at his residence in the country; his chief employments being study and the examination of the numerous interesting productions his house and grounds contained, being in his own words, "a perfect Noah's ark." Farming occupied also a portion of his time, and the making of roads, and improving the neighbouring country. In a letter to his cousin, he pleasantly writes, "Much of my time is taken up in agricultural pursuits. I am by far the most active farmer in the country; and as President of the Agricultural Society, not only take precedence at the board but in the field. I have a dozen ploughs constantly going, and before I quit the estate, I hope to realize a revenue of L. 2000 or L. 3000 a-year, besides feeding its population."

This state of rural happiness and employment in benefiting the country was now however about to terminate. A succession of sickly seasons occurred, which ravaged the population, and we may almost be surprised that Sir Stamford and his lady were preserved among the many losses they sustained. Their three eldest children fell victims in succession to the

climate, and it was resolved that they should consent to separation from their fourth and only surviving daughter, rather than that she should run the risk of encountering the malaria. To these diseases his bosom friend and companion in research also fell a victim, and while under these severe dispensations, a voyage to Singapore was undertaken finally to arrange the settlement, and to prepare for his departure from the East, after a residence of much labour, anxiety, and satisfaction, of much affliction and much happiness.

At Singapore health and resignation of mind were in part restored. Many interesting productions were added to his private collection now immense, while several useful establishments and regulations were completed, and all in this part was arranged for departure. He returned again to Bencoolen; the ship which was intended to carry the late governor to his native country has arrived; all his collections, great and invaluable, were on board; and on the 2d February 1824, Sir Stamford and his family embark in the Fame and sail for England with a fair wind. But early in the first night of their hopes and anticipations, they were turned into distraction, and all their powers exerted to save life alone. We shall give the account of this dreadful calamity, written by Sir Stamford himself, two days after its occurrence, and leave the reader to judge what his feelings must have been. To Natural History it was the most extensive loss of materials she had ever sustained.

" We embarked on the 2d instant in the Fame,

and sailed at daylight for England with a fair wind, and every prospect of a quiet and comfortable passage.

" The ship was every thing we could wish, and having closed my charge here much to my satisfaction, it was one of the happiest days of my life. We were perhaps too happy, for in the evening came a sad reverse. Sophia had just gone to bed, and I had thrown off half my clothes, when a cry of Fire, fire! roused us from our calm content, and in five minutes the whole ship was in flames! I ran to examine whence the flames principally issued, and found that the fire had its origin immediately under our cabin. Down with the boats. Where is Sophia? Here. The children? Here. A rope to this side. Lower Lady Raffles. Give her to me, says one: I'll take her, says the captain. Throw the gunpowder over board. It cannot be got at; it is in the magazine close to the fire. Stand clear of the powder. Skuttle the water-casks. Water! Water! Where's Sir Stamford? Come into the boat, Nilson! Nilson, come into the boat. Push off—push off. Stand clear of the after part of the ship.

" All this passed much quicker than I can write it. We pushed off, and as we did so, the flames burst out of our cabin window, and the whole of the after part of the ship was in flames. The masts and sails now taking fire, we moved to a distance sufficient to avoid the immediate explosion; but the

flames were now coming out of the main hatchway, and seeing the rest of the crew, with the captain, still on board, we pulled back to her under her bows, so as to be more distant from the powder. As we approached we perceived that the people on board were getting into another boat on the opposite side. She pulled off—we hailed her; have you all on board? Yes, all save one. Who is he? Johnson, sick in his cot. Can we save him? No, impossible. The flames were issuing from the hatchway. At this moment, the poor fellow scorched, I imagine, roared out most lustily, having run upon deck. I will go for him, says the captain. The two boats then came together, and we took out some of the persons from the captain's boat, which was overladen; he then pulled under the bowsprit of the ship, and picked the poor fellow up. Are you all safe? Yes, we have got the man—all lives safe. Thank God! pull off from the ship. Keep your eye on a star, Sir Stamford. There is one scarcely visible.

"We then hauled close to each other, and found the captain fortunately had a compass, but we had no light except from the ship. Our distance from Bencoolen we estimated to be about fifty miles in a south-west direction. There being no landing-place to the southward of Bencoolen, our only chance was to regain that port. The captain then undertook to lead, and we to follow, in a north north-east course, as well as we could, no chance, no possibility being

left, that we could again approach the ship; for she was now one splendid flame, fore and aft, and aloft, her masts and sails in a blaze, and rocking to and fro, threatening to fall in an instant. There goes her mizen-mast; pull away my boys. There goes the gunpowder. Thank God!—thank God!

"You may judge of our situation without farther particulars. The alarm was given at about twenty minutes past eight, and in less than ten minutes she was in flames. There was not a soul on board at half-past eight, and in less than ten minutes afterwards she was one grand mass of fire.

"My only apprehension was the want of boats to hold the people, as there was not time to have got out the long boat, or to make a raft; all we had to rely upon were two small quarter boats, which fortunately were lowered without accident; and in these two small open boats, without a drop of water or grain of food, or a rag of covering, except what we happened at the moment to have on our backs, we embarked on the ocean, thankful to God for his mercies! Poor Sophia, having been taken out of her bed, had nothing on but a wrapper, neither shoes nor stockings. The children were just as taken out of bed, where one had been snatched after the flames had attacked it;—in short, there was not time for any one to think of more than two things. Can the ship be saved? No. Let us save ourselves then. All else was swallowed up in one grand ruin.

"To make the best of our misfortune, we availed

ourselves of the light from the burning ship to steer a tolerably good course towards the shore. She continued to burn till about midnight, when the saltpetre she had on board took fire, and sent up one of the most splendid and brilliant flames that was ever seen, illuminating the horizon in every direction to an extent of not less than fifty miles, and casting that kind of blue light over us, which is of all others the most horrible. She burnt and continued to flame in this style for about an hour or two, when we lost sight of the object in a cloud of smoke.

" Neither Nilson nor Mr Bell, our medical friend, who had accompanied us, had saved their coats; but the tail of mine, with a pocket handkerchief, served to keep Sophia's feet warm, and we made breeches for the children with our neckcloths. Rain now came on, but, fortunately, it was not of long continuance, and we got dry again. The night became serene and starlight; we were now certain of our course, and the men behaved manfully; they rowed incessantly, and with good heart and spirit, and never did poor mortals look out more for daylight and for land than we did; not that our sufferings or grounds of complaint were any thing to what had befallen others, but from Sophia's delicate health, as well as my own, and the stormy nature of our coast, I felt perfectly convinced we were unable to undergo starvation and exposure to sun and weather many days, and, aware of the rapidity of the currents, I feared we might fall to the southward of the port.

"At daylight we recognised the coast and Rat Island, which gave us great spirits; and though we found ourselves much to the southward of the port, we considered ourselves almost at home. Sophia had gone through the night better than could have been expected, and we continued to pull on with all our strength. About 8 or 9 we saw a ship standing to us from the roads; they had seen the flames from shore, and sent out vessels to our relief; and here, certainly, came a minister of Providence, in the character of a minister of the Gospel, for the first person I recognised was one of our missionaries. He gave us a bucket of water, and took the captain on board as a pilot. The wind, however, was adverse, and we could not reach the shore, and took to the ship, where we got some refreshment and shelter from the sun. By this time Sophia was quite exhausted, fainting continually. About two o'clock we landed safe and sound, and no words of mine can do justice to the expressions of feeling sympathy and kindness with which we were hailed by every one. If any proof had been wanting that my administration had been satisfactory here, we had it unequivocally from all; there was not a dry eye, and as we drove back to our former home, loud was the cry of 'God be praised.'

"The loss I have to regret beyond all, is my papers and drawings,—all my notes and observations, with memoirs and collections, sufficient for a full and ample history, not only of Sumatra, but of Borneo,

and almost every other island of note in these seas; —my intended account of the establishment of Singapore;—the history of my own administration;—eastern grammars, dictionaries, and vocabularies;—and last, not least, a grand map of Sumatra, on which I had been employed since my arrival here, and on which, for the last six months, I had bestowed almost my whole undivided attention. This, however, was not all;—all my collections in natural history, all my splendid collection of drawings, upwards of 2000 in number, with all the valuable papers and notes of my friends Arnold and Jack; and, to conclude, I will merely notice, that there was scarce an unknown animal, bird, beast or fish, or an interesting plant, which we had not on board; a living tapir, a new species of tiger, splendid pheasants, &c. domesticated for the voyage; we were, in short, in this respect, a perfect Noah's Ark.

"All—all has perished; but, thank God, our lives have been spared, and we do not repine.——"

After this heavy dispensation we might suppose a person desponding, it was not so with Sir Stamford; and in no event of his life did he exhibit so much energy. He had seen the labours of twenty years, his collection of drawings, manuscripts of his own, and of his companions, who had fallen victims to their researches, the greater part of his private property, the presents of his friends, and testimonials of his services, all swept away, reduced to ashes in a few hours. But truly thankful for the preserva-

tion of his family, and as soon as he had again placed them in a situation of comfort and safety, do we find him endeavouring to repair the vast losses he had sustained. The very day after, he commenced sketching from recollection his map of Sumatra,—set to work draftsmen, and sent people to the forests to collect new specimens. He repined not, but went perseveringly on; and the best proof of his success is the large assemblage of subjects which he munificently presented to the Zoological Society upon its institution.

The anxiety of Sir Stamford and Lady Raffles, after these severe trials, to reach England, naturally increased, and another ship was engaged, in which they again embarked on the 8th of April. They experienced a most tempestuous passage, but arrived in safety among their anxious friends. The constitution of Sir Stamford was very much shattered by climate and the constant exercise of his mind, for it was one of those which could never rest, but which eventually actually wear themselves out. The cares of his friends comparatively restored his health, and his spirits never flagged; mentioning his future plans of life, he says, "I confess I have a great desire to turn farmer, and have the vanity to think I could manage about two hundred acres as well as my neighbours. With this, I suppose, I should in time become a county magistrate, an office of all others I should delight in, and if I should eventually get a seat in Parliament, without sacrifice in principle, I

should be content to pass through the restof my life without aiming at any thing farther, beyond the occupation of my spare time in promoting, as far as my humble means and talents admitted, the pursuits of knowledge and science, and the advancement of philanthropic and religious principles." Thus marking out for himself a course of active employment.

The love of retirement and free intercourse with nature, wearied him of London, and soon after his arrival in England he purchased the estate of Highwood, not far from town, which he intended should be his head quarters. His time was in the mean time actively employed in arranging from recollection parts of his researches in the East, and in examining what he had been enabled to collect during his short stay at Bencoolen after the burning of the Fame. He now expressed his opinion of the possibility of a Society somewhat upon the plan of the Garden of Plants, and enlisted in his cause the services of Sir Humphry Davy. To his cousin, in the full enthusiasm of success, he writes: "I am much interested at present in establishing a grand Zoological Collection in the Metropolis, with a Society for the introduction of living animals, bearing the same relations to Zoology as a science, that the Horticultural does to Botany. We hope to have 2000 subscribers, at L. 2 each; and, it is farther expected, we may go far beyond the Jardin des Plantes at Paris. Sir Humphrey Davy and myself are the projectors. And while he looks more to the practical and immediate

utility to the country gentlemen, my attention is more directed to the scientific department." The increase of zoological knowledge by the study of the living beings, the introduction of such as might prove useful in our manufactures or commerce, and the giving to the science popularity and general diffusion, were among the chief objects. The hopes of establishing such a combination were crowned with the utmost success in the institution of the Zoological Society of London. We have not room to give all the plan, details, and prospectus of the commencement of this now important institution, but it will be interesting, and perhaps wished for by many, to see the names of those who were first associated with Sir Stamford in its formation.

Sir Stamford Raffles, LL. D., F. R. S., &c. *Chairman.*
Duke of Somerset, LL. D., F. R. S., &c.
Earl of Darnley, F. R. S., &c.
Viscount Gage, M. A., &c.
Samuel, Lord Bishop of Carlisle, LL. D., V. P. R. S., &c
Lord Stanley, M. P., V. P. R. S., &c.
Sir H. Davy, Bart. LL. D., Pres. R. S., &c.
Sir Everard Home, Bart. V. P. R. S., &c.
E. Barnard, Esq. F. L. S., &c.
H. T. Colebrooke, Esq. F. R. S., &c.
Davies Gilbert, Esq. V. P. R. S., &c.
Earl of Egremont, F. R. S., &c.
Earl of Malmesbury.
Rev. Dr Goodenough, F. R. S., &c.
Thomas Horsfield, M. D., F. L. S., &c.
The Rev. W. Kirby, M. A., F. R. S., &c
T. A. Knight, Esq. F. R. S., Pres. H. S., &c.
T. A. Knight Jun. Esq. M. A., &c.

W. Sharpe Macleay, Esq. M. A., F.L.S., &c.
Joseph Sabine, Esq. F. R. S., &c.
N. A. Vigors, Esq. M. A., F. R. S., &c.
Charles Baringwall, Esq. M. P.

Such was the establishment of the London Zoological Society, now advanced to such a state of prosperity, as, (with the proper distribution of a large income) to have the power of promoting science more than any other European establishment. Sir Stamford foresaw all this,—saw his most sanguine hopes were to be realized, and bequeathed to it the remains of his great and valuable collections.

But he scarcely witnessed, in reality, more than its splendid commencement. The fatigues of his long public career, the energy of his mind, and great excitement incident to the success of any favourite scheme, had worn out and undermined his constitution; and two years after his return to England, when about to retire from public life and enjoy domestic privacy, he was suddenly snatched from his family and friends. Some time previously, he had had a shock, which, at the time, was not considered serious; but, on the 5th July 1826, he was threatened with a return of it, which confirmed the previous suspicions of his medical attendants, and terminated fatally. He expired on the day previous to the completion of his 45th year.

Thus we have seen the life of Sir Stamford Raffles to have been one of unwearied activity for the bene-

fit of his employers, the prosperity of those he superintended, and the advancement of natural science. His works, with the exception of the History of Java, are chiefly contributions to the Asiatic and Batavian Transactions, and those of the Linnæan Society of London, upon the Antiquities and History of the Tribes and Country, and the Natural History of the Eastern Archipelago. But in this enumeration we must not neglect those which shared the fate of his collections. They included Histories of Sumatra, Borneo, Celebs, Java and the Moluccas, and Singapore, besides Translations from ancient manuscripts, Dictionaries, Grammars and Vocabularies. While among the memoranda which he left, were the titles of several projected works,—"Notes illustrative of the Natural History, and more especially the Geology of the Malay Islands, containing Geographical and Geological Notices, with an account of some of the more remarkable Vegetable Productions, and the outline of a Fauna Malayana." Another work, with the assistance of Dr. Horsfield, was thus sketched out: "Contents, introduction,—Geographical and Geological Outline of the Archipelago,—ditto of Java, with Plates,—ditto of Sumatra, with ditto,—and Journey to Menangkabu,—Banca, with a Map and abstract Memoir; principal Vegetable Productions, and their Distribution and Localities,—Fauna Malayana,—Larger Animals, &c. Distribution and Account of, generally as introductory to the Descrip-

tive Catalogue. Catalogue arranged scientifically, with relation to the order of Nature."

They would have embraced every department in the history of these countries, and the extensive view he took, leads us only more and more to regret their being lost to his successors in science. No natural history of the East can be given without introducing the labours of *Sir Stamford Raffles*, and as a patron of Natural History, his name will stand coupled with that of *Sir Joseph Banks*.

It only remains that we close this biographical Memoir with some account of his elaborate and valuable History of Java, to which we already alluded, when adverting to the occasion of his receiving the honour of Knighthood from the Prince Regent, in 1817. Though written hastily, and for a special object, this interesting work contains a very ample detail of every thing connected with that island and its inhabitants;—its antiquities;—the different races by whom it was originally peopled;—its ancient and modern history;—its geographical situation;—its animal, vegetable, and mineralogical productions;—its climate, soil, manufactures, commerce, and institutions;—the state of the arts and sciences;—the various dialects spoken by the natives;—their manners and customs;—their religious ceremonies;—and forms of government. To enter into a description of all, or most of these particulars, would compel us to ex-

tend this sketch far beyond its due limits; nor is it necessary to our purpose. We shall therefore confine our observations to such parts of the work as are connected with the physical, rather than with the civil or political history of the country.

Of Java, little is known until the establishment of Mohammedanism about the end of the 13th century of the Javan era (1475), when, according to the native annalists, Mulana Ibrahim, a celebrated Pandita from Arabia, learning that the inhabitants of that large and populous island were heathens, resolved to undertake an expedition for their conversion to the faith of the Prophet. In course of time the Moslem creed prevailed, after a long and bloody war. About two hundred years later, Java was first visited by the English and Dutch; the latter, as is well known, succeeded in establishing their power at Bantam (1595), availing themselves of the divisions and convulsions by which the country had been previously distracted.

Passing over the long train of military and mercantile transactions which followed, we need only mention that by the final settlement of 1758, at the end of twelve years' war, in which the finest provinces of the island were laid waste, thousands slain on both sides, and the independence of the ancient empire totally annihilated, the Dutch divided the government between themselves and the native princes, to whom the inland and southern districts

were restored, and parcelled out in nearly equal proportions.

The terms on which these arrangements stood, suffered no material alteration until the year 1808, when the ambitious views of Bonaparte had begun to be more fully developed; and the annexation of Holland to France, placed at his disposal all the valuable and extensive possessions of the Dutch in the Eastern Seas;—possessions as important to Holland, as those on the continent of India are to Great Britain. France then looked to Java as the point from whence her operations might be most successfully directed, not only against the political ascendancy of England in the East, but likewise against her commercial interests both abroad and at home. Accordingly, with a view to promote the designs of Napoleon, the Dutch governor of Java, Marshal Daendels, officially declared, that the clauses of the existing treaties, by which the native princes held their territories in fee from the Dutch, were void; and that, in future, he should consider them as independent princes, having no other relation to the European government, than such as must of necessity exist between a weaker and stronger state in the immediate neighbourhood of each other. This declaration was tantamount either to voluntary submission on the part of the weaker, or immediate hostilities should they venture to resist. Some indications of opposition having appeared, Marshal

Daendels advanced towards the capital with a considerable force; but a negociation having been opened, a treaty was entered into, by which the reigning Sultan (Amang Kubuana II.) consented to surrender the administration of the country into the hands of his son (Amang Kubuana III.); who was appointed to exercise the same, under the title of regent, and to cede certain provinces.

The stipulations of this treaty had not been carried into effect, when, in the month of August 1811, the British forces arrived in Java, accompanied by Lord Minto, the Governor-General of India, with Mr. Raffles, acting in the capacity of his Secretary. General Jansens, who had succeeded Marshal Daendels in the government, expected the invasion of the English, and was making all preparations within his power to meet them. But his efforts were in vain; a short campaign of three weeks, and one decisive engagement, sufficed to make the invaders masters of the whole Dutch possessions. The British were landed on the 16th of August, and the battle of Carmelis was fought by Sir Samuel Auchmuty on the 26th, which decided the conquest of the island; although the final capitulation was not signed till the 18th of September, at Semarang, where General Jansens had retired after his defeat. The capture of Java was announced by Lord Minto, to the authorities in England, in the following terms:—"An empire, which for two centuries has contributed greatly to

the power, prosperity, and grandeur of one of the principal and most respected states in Europe, has been thus wrested from the short usurpation of the French government, added to the dominion of the British crown, and converted from a state of hostile machination and commercial competition, into an augmentation of British power and prosperity."

The government of this new "empire" was bestowed with a feeling and confidence honourable to the giver, and no less gratifying to the person in whom such a high and noble trust was reposed. His Lordship, says Lady Raffles in her Memoir, "though partly pledged to another, declared he could not conscientiously withhold it from him who had won it; and, therefore, as an acknowledgement of the services he had rendered, and in consideration of his peculiar fitness for the office, he immediately appointed Mr. Raffles to it, under the title of Lieutenant-Governor of Java, and its dependencies."

Of his administration, and especially of his great services to natural science during the four years he held that office, we have already given some account; the causes of his returning to England have also been noticed; as well as the employment of his leisure time there in writing his History. His great object in undertaking this laborious work, says his widow, "was to record the information which he had collected regarding Java. The island had been transferred by the English government, in

total ignorance of its value, to the Dutch*. The presence of Mr. Raffles in England created an interest in the subject, as far as his personal influence extended. To diffuse this interest more generally, and to make the country sensible of the loss sustained, by the relinquishment of so flourishing a colony to a foreign and a rival power, he determined to write his History of Java, which he completed with his usual quickness. A few sheets were rapidly written off every morning for the printer, and corrected at night on his return from his dinner engagements. It was commenced in the month of October, 1816, and published (in two volumes quarto) in May, 1817."

Sir Stamford himself, in his Preface, alludes to an intimate friend whom he thought better qualified for such a work; and as he pays a tribute, not more eloquent than sincere, to a distinguished Scotchman, the celebrated Dr. Leyden, who had accompanied the expedition to Batavia, and died immediately on the landing of the troops, we need offer no apology for quoting that passage. "Most sincerely and deeply do I regret that this book did not fall into hands more able to do it justice. There

* On the 13th of August, 1814, a convention was entered into by Viscount Castlereagh at Vienna, on the part of his Britannic Majesty, restoring to the Dutch the whole of their former possessions in the Eastern Islands; and on the 19th August, 1816, the flag of the Netherlands was again hoisted at Batavia.

was one (Dr. L.), dear to me in private friendship and esteem, who, had he lived, was of all men best calculated to have supplied those deficiencies which will be apparent in the very imperfect work now presented to the public.' From his profound acquaintance with Eastern languages and Indian history, from the unceasing activity of his great talents, his prodigious acquirements, his extensive views, and his confident hope of illustrating national migrations from the scenes which he was approaching, much might have been expected; but just as he reached those shores on which he hoped to slake his ardent thirst for knowledge, he fell a victim to excessive exertion, deplored by all, and by none more truly than myself."

Without detracting from the high encomium here passed on Leyden, we may venture to assert, that the public are well satisfied as to the manner in which the author himself has prepared and executed his laborious task, notwithstanding his impaired state of health, and the many encroachments made on his time. In every chapter he pours forth the treasures of a mind stored with information, whether the subject be religion or literature, commerce or agriculture, the remains of antiquity or the pursuits of science.

Of the chapters devoted to the learning and superstitions of the natives; their religious edifices, especially the splendid temples of Brambanan, Boro Bodo, Gunung Prahu, Kediri, Singa Sari, Suku,

&c., it would be foreign to our purpose to give any analysis. Many of these excel the monuments of Egypt in the elegance of their sculpture, the number of their images, and the beauty of their architecture. Whole plains are found covered by scattered ruins, and large fragments of hewn stone; and in one place were traced the sites of nearly four hundred temples, having broad and extensive streets or roads running between them at right angles. It was not until very recently that the antiquities of Java excited much notice. "The narrow policy of the Dutch (Sir Stamford observes) denied to other nations facilities of research; and their devotion to the pursuits of commerce, was too exclusive to allow of their being much interested by the subject. The numerous remains of former art and grandeur, which exist in the ruins of temples and other edifices; the abundant treasures of sculpture and statuary with which some parts of the island are covered; and the evidences of a former state of religious belief and national improvement, which are presented in images, devices, and inscriptions, either lay entirely buried under rubbish, or were but partially examined. In addition to their claims on the consideration of the antiquarian, two of these ruins, Brambanan and Boro Bodo, are admirable as majestic works of art. The great extent of the masses of building, covered in some parts with the luxuriant vegetation of the climate, the beauty and delicate execution of the separate portions, the

symmetry and regularity of the whole, the great number and interesting character of the statues and bas-reliefs with which they are ornamented, excite our wonder that they were not earlier examined, sketched, and described."

It is almost during the present century, and chiefly by the exertions of Sir Stamford himself, that these singular reliques have been brought to light, and made known to Europe. His volumes contain some hundreds of these objects, including temples, statues, inscriptions, medals, coins, cups, and other implements, taken from the original casts in stone, copper, or brass, but rarely of silver. It is said that formerly many gold casts were discovered of a similar description, but these have disappeared, and one village is mentioned as having from time immemorial paid its annual rent, amounting to upwards of a thousand dollars, in gold procured by melting down the relics of antiquity found in its neighbourhood. The age of most of these remains is alleged to be between the sixth and ninth century of the Christian era, that being the period of greatest splendour in the East, though the darkest spot in the intellectual history of Europe. They are partly Mohammedan, but chiefly Pagan or Indian, several of them having been evidently consecrated to the worship of Budh.

In concluding his interesting remarks on these architectural antiquities, Sir Stamford infers, from the extensive variety of temples and sculpture, as

well as from that of the characters found in the ancient inscriptions, the probability that Java has been colonised from different parts of the continent of Asia. "The Budhist religion (says he) is by many deemed of higher antiquity than what is now called the Braminical, and it seems generally admitted that the followers of Budh were driven by the Bramins to the extremes of Asia and the islands adjacent. The Javans and Budhists had probably the same worship originally, from which the Bramins or priests may have separated, after the manner in which it has been said the Jesuits of Europe once aimed at universal empire; and when we consider that the religion of Budh, or some modification of it, is still the prevailing worship of Ceylon, Ava, Siam, China, and Japan; we are not surprised to find indications of its former establishment in Java." Leaving these subjects, however, and passing over what is said of the civil, political, and commercial history of the country, as well as of the learning and habits of the people, we shall advert briefly to some other points that are more akin to the nature and design of a work like the present, viz. the description that is given of the country, of its physical structure, and its animal and vegetable productions.

The length of Java, in a straight line drawn between its extreme points, is about six hundred and sixty-six statute miles; its breadth varies from about one hundred and thirty-five to fifty-six; and it is

estimated to contain an area of nearly fifty thousand square miles. The western and northern coasts abound with bays and inlets, the maritime districts are generally separated from each other by rivers, those in the interior, often by ranges of hills and mountains; there are many excellent harbours secure against the violence of the sea and wind, and capable of being rendered impregnable to hostile attacks.

There are no lakes of any great size, for that name cannot be given to the *rawas* or swamps, which, though swelled to a considerable size in the wet season, are, for the rest of the year, either dried up, or choked by vegetation. But no region is perhaps better watered, or more singularly favoured in the number of its streams, than Java. The size of the island does not admit of the formation of large rivers; but there are probably fifty that in the wet season bear down rafts charged with timber and rough produce of the country; and not less than five or six, the Solo, the Awi, the Surabaya, the Chikondi, &c., are at all times navigable to the distance of some miles from the coast. Along the northern coast, almost every district has its principal river, and most of them are navigable, up to the maritime capitals, for native vessels of considerable burden; but they all have the disadvantage of being partially blocked up at their embouchures by extensive bars and mud-banks; an evil which is extending with the increase of agriculture, by rea-

son of the quantity of soil necessarily washed down in the process of irrigating the land for the rice cultivation. Most of them require the application of jetties, or piers, to deepen the passage at their entrance. In some parts extensive swamps are found; and among the hills, several very beautiful lakes of small dimensions are discovered, some of them evidently formed of the craters of extinct volcanoes.

In summing up what may be called his geographical and physical description of the island, the author thus proceeds. "The general aspect of Java, on the northern coast, is low; in many places swampy, and overgrown with mangrove trees and bushes, particularly towards the west. The southern coast, on the contrary, consists almost entirely of a series of rocks and cliffs, which rise perpendicularly to a considerable height. In the interior, stupendous mountains stretch longitudinally throughout the island; while others of an inferior elevation, and innumerable ranges of hills, running in various directions, serve to form and confine plains and valleys of various elevations and extent. On the northern side, the ascent is in general very gradual from the sea-coast to the immediate base of the mountains; particularly in the western parts of the island, where it has the greatest breadth, and where the mountains are situated far inland. In approaching the mountains which lie at the back of Batavia, there is a gradual but almost imperceptible declivity for about forty miles; in other parts, where the hills

approach nearer to the coast, the ascent is of course more abrupt, as may be observed in the vicinity of Samarang.

"Although the northern coast is in many parts flat and uninteresting, the interior and southern provinces, from the mountainous character of the country, may be reckoned among the most romantic and highly diversified in the world; uniting all the rich and magnificent scenery which waving forests, never-failing streams, and constant verdure can present, heightened by a pure atmosphere, and the glowing tints of a tropical sun. Large tracts, particularly in the mountainous ranges of the western districts, still remain in a state of nature; or where the ground has been once cleared of forests, are now overrun with long rank grass. In the central and eastern districts, the country is comparatively well clothed with cultivation.

"Quitting the low coast of the north, in many parts unhealthy, the traveller can hardly advance five miles inland without feeling a sensible improvement in the atmosphere and climate as he proceeds; at every step he breathes a purer air, and surveys a brighter scene. At length he reaches the high lands; here the boldest forms of nature are tempered by the moral arts of man; stupendous mountains clothed with abundant harvests, impetuous cataracts tamed to the peasant's will. Here is perpetual verdure; here are tints of the brightest hue. In the hottest season, the air retains its freshness;

in the driest, the innumerable rills and rivulets preserve much of their water; this the mountain farmer directs, in endless conduits and canals, to irrigate the land, which he had laid out in terraces for its reception; it then descends to the plains and spreads fertility wherever it flows, till at last, by numerous outlets, it discharges itself into the sea."

To strangers, the bold outline and prominent features of the scenery are peculiarly striking. An uninterrupted series of huge mountains, varying in their elevation above the sea from five to eleven or twelve thousand feet, and exhibiting by their round base, or pointed tops, their volcanic origin, traverse the whole length of the island. Some of these are seen from the roads of Batavia, and from their appearance are usually termed by mariners the "Blue Mountains." From the eastern parts of the Gede, the volcanic series separates into two independent branches, one of which inclines to the south; the other proceeds almost due east, slightly verging to the north. The former breaks into an irregular transverse range, which extends across the island till it approaches the northern branch, from whence the general series is continued in an easterly direction as far as the Sindoro, the western of the two mountains known by the name of the Two Brothers. There are various others running in different directions, but all agreeing in the general attribute of volcanoes, having a broad base gradually verging towards the summit in the form of a cone. Most

of them have been formed at a very remote period, and are covered with the vegetation of many ages; but the indications and remains of their former irruptions are numerous and unequivocal. The craters of several are completely extinct; those of others contain small apertures, which continually discharge sulphurous vapours or smoke. Many of them have had irruptions during late years, of which an interesting account has been given in the Batavian Transactions, by Dr. Horsfield, who examined them.

One of the most disastrous of these on record, was that of the Papandayang, the greater part of which was swallowed up in the earth, together with an immense number of people, after a short but severe combustion, in the year 1772. "The account (says Dr. Horsfield) which has remained of this event asserts, that near midnight, between the 11th and 12th of August, there was observed about the mountain an uncommonly luminous cloud, by which it appeared to be completely enveloped. The inhabitants about the foot, as well as on the declivities of the mountain, alarmed by this appearance, betook themselves to flight; but before they could all save themselves, the mountain began to give way, and the greatest part of it actually fell in and disappeared. At the same time a tremendous noise was heard, resembling the discharge of the heaviest cannon. Immense quantities of volcanic substances, which were thrown out at the same time and spread

in every direction, propagated the effects of the explosion through the space of many miles. It is estimated that in extent of ground, of the mountain itself and its immediate environs, fifteen miles long and full six broad, was by this commotion swallowed up in the bowels of the earth. Several persons sent to examine the condition of the neighbourhood, made report that they found it impossible to approach the mountain, on account of the heat of the substances which covered its circumference, and which were piled on each other to the height of three feet, although this was the 24th of September, full six weeks after the catastrophe. It is also mentioned that forty villages, partly swallowed up by the ground, and partly buried by the substance thrown out, were destroyed on this occasion; and that 2957 of the inhabitants perished. A proportionate number of cattle was also destroyed; and most of the plantations of cotton, indigo, and coffee, in the adjacent districts, were buried under the volcanic matter. The effects of that explosion are still very apparent in the remains of this volcano."

Alluvial districts, evidently of recent origin, are noticed in several parts of the island. These are formed from the sediment, and near the discharge of large rivers, and at the border of the calcareous ridges, which are in many instances partially ruined by them; their boundary can easily be traced, and most of them are in a state of constant progres-

sion. Among other phenomena, are mineral wells of various temperature and impregnation; wells of naphtha or petrolium; and rivers arising in a few cases from the craters of volcanoes impregnated with sulphureous acid. From these and all other investigations yet made, the constitution of Java appears to be exclusively volcanic; it may, indeed, be considered as the first of a series of volcanic islands, which extend nearly eastward from the Straits of Sunda for about twenty-five degrees.

"At what period (says our author) the island assumed its present shape, or whether it was once joined to Sumatra and Bali, is matter for conjecture. The violent convulsions which these islands have so often suffered, justify a conclusion that the face of the country has frequently changed, and tradition mentions the periods when Java was separated from those islands; but the essential difference which has been found in the mineralogical constitution of Java and Sumatra, would seem to indicate a different origin; and to support the opinion that those two islands were never united. Whether at a period more remote, the whole archipelago formed part of the continent of Asia, and was divided from it, and shattered into islands; whether they were originally distinct from the mainland; or whether they were formed at the same time or subsequently, are questions we cannot resolve. Yet when we reflect on the violence of those dreadful phenomena which have occurred in

our own times, in the smaller islands of the volcanic series, (for example the eruption of the Tombero mountain in the island of Sumatra, in April 1815, which embraced a circle of a thousand miles around it), and view this range as it is now presented to us on the map of the world, a conjecture perhaps might be hazarded, that the whole may have once formed but the southern side of one large island or continent, within which much of the mainland has fallen in, and subsequently disappeared in the influx of the sea."

The constitution of Java is unfavourable to metals, and it may be laid down as a general position, that these no where occur in such a quantity, or with such richness of ore, as to reward the operations of the miner. Iron pyrites is found in small quantity in several districts, as well as red ochre, which, however, often contains so little iron as scarcely to serve for the common purpose of paint. There are no diamonds or other precious stones; but many minerals of the schorl, quartz, potstone, feldspar, and trap kind. Prase and hornstone are abundant in particular situations, as well as flint, chalcedony, hyalite, common jasper, jasper-agate, obsidian, and porphyry. The soil is for the most part rich and deep, resembling the finest garden-mould of Europe; and wherever it can be exposed to the inundation necessary for the rice-crop, requires no manure, and will bear without impoverishment one heavy and one light crop in the year. The poorest, with this

advantage, will yield a liberal return to the husbandman. The seasons depend upon the periodical winds; the westerly, which are always attended with rain, are generally felt in October, become more steady in November and December, and gradually subside till March or April, when they are succeeded by the easterly winds and fair weather, which continue for the remaining half-year. The heaviest rains are in the months of December and January, and the driest weather in July and August; at which latter period, also, the nights are coldest and the days hottest. Thunder storms are frequent, and the lightning extremely vivid.

Java is distinguished not only for the abundance of its vegetation, but for its extraordinary variety. Dr. Horsfield, who directed his sole attention many years to the natural history of the island, had collected in his herbaria, in the year 1816, upwards of a thousand plants, of which a large proportion were new to the science of botany. Between the tops of the mountains and the sea-shore, Java may be said to possess at least six different climates, each furnishing a copious indigenous botany, while the productions of every region in the world may find a congenial spot somewhere in the island. Vegetable productions, which contribute to the food and sustenance of man, are found in great variety. Of these the most important is rice, which forms the staple grain of the country. Maize, or Indian corn, ranks next, and is principally cultivated in

the higher regions; the bean is an important article of food; the sugar-cane, of which they reckon eight varieties, they use only in its raw state; coffee, pepper, indigo, tobacco, anniseed, cinnamon-seed, cubebs, &c., are cultivated, and collected for various purposes in diet and medicine. Besides the cocoa-nut, and other productions more generally known, there are many trees growing spontaneously, of which the seeds and kernels are used as food. Wheat and potatoes, with almost every species of European vegetable, are cultivated with success. The true sago of Amboina and the Eastern Islands is found only solitary in a few low and marshy situations, and the preparation of it from the pith of the tree is not known to the inhabitants of Java, who make use of the leaves only for covering their houses.

No region of the earth is better supplied with indigenous fruits; the mango, the plantain, the guava, the pine-apple, the papow, the custard-apple, the pomegranate, and almost every species which grows within the tropics, are here found in the greatest variety. The tamarind-tree is general; there are also many kinds of oranges, lemons, citrons, and in particular the pumple-moos (the shaddock of the West Indies), with various others not generally known in Europe, but well calculated for the table.

A great variety of ornamental trees and shrubs have been enumerated which bloom in perpetual

succession throughout the year, and impregnate the air with their fragrance. Among the medicinal plants, many are employed in the daily practice of the natives, of which a large proportion have not been subjects of investigation or experiment by Europeans. Different sorts of vegetable substances are used in dyeing. Of these the principal is the indigo, which is extensively cultivated; and the wong-kudu, which affords a lasting scarlet. Of forest-trees, the most valuable is the teak, of which there are several varieties, differing in quality; the harder kind is selected for ship-building, the inferior is used for domestic purposes.

Among other useful trees may be noticed the soap-tree, the fruit of which is used in washing linen; the kasemak, from the bark of which is made a varnish for umbrellas; the sampang, the resin of which is prepared into a shining varnish for the wooden sheaths of daggers; the cotton-tree, whose silky wool is used for stuffing pillows and beds; the wax-tree, whose kernel, by expressure, produces an oil that may be burnt in lamps or converted into candles, and affords an agreeable odour; the bendud, a shrub producing the substance out of which India-rubber is prepared; torches are made of it for the use of those who search for birds' nests in the rocks, and it serves for winding round the stick employed to strike musical instruments, to soften the sound.

Among the vegetable productions of Java, none

has excited more interest than the celebrated upas, or poison tree, of which as many wonderful stories have been told as of the centaur, the Lernean hydra, or any other of the classic fictions of antiquity. These extravagant fables have often been refuted by naturalists; and it is only among the ignorant, or the dupes of the poet and the popular orator, that the romances on the subject of the upas find believers. A fatal poison is, no doubt, prepared from the sap, mixed with various other substances; but without this process it is said to be harmless.

Of the useful or domestic animals, Java may be said to be deficient; neither the elephant nor the camel is a native; the former is rarely imported, and the latter is unknown. Neither the ass nor the mule is found; but there is a fine breed of small horses, strong, fleet, and well made. A still finer breed is imported from Bima, on the neighbouring island of Sumbawa, which, by competent judges, has been said to resemble the barb in every respect, except size. They seldom exceed thirteen hands, and in general are below this standard. The bull and cow are general, and the breed has been greatly improved by the species introduced from continental India. The most essential animal is the buffalo, from its being generally employed in agriculture. Goats are numerous, but sheep scarce; and both are of a small size.

The aggregate number of mammalia in Java, has

been estimated at about fifty. The habits and manners of the larger animals, the tiger, leopard, black tiger, rhinoceros, stag, two species of deer, ten varieties of the wild hog, &c., are sufficiently known; but the banting, or Javan ox, the buffalo, the varieties of the wild dog, the weasel, and squirrel, and most of the smaller quadrupeds, still present curious subjects for the study of the Naturalist. Next to the rhinoceros, which sometimes injures plantations, the wild hogs are the most destructive animals. They are often poisoned (or intoxicated, according to the quantity they consume) by the *kalek kambing*, or by the refuse from the preparation of *brous*.

The birds include many species belonging to Europe. The domestic fowls are the same; among the birds of prey the eagle is not found, but there are several varieties of the falcon. They have the carrion-crow and the owl; but only two of the parrot kind; and in large forests the peacock is very common. The number of distinct species of birds has been estimated not greatly to exceed two hundred, of which upwards of one hundred and seventy have been described, and are already contained in the collections made on account of the English East India Company.

NATURAL HISTORY

OF

GALLINACEOUS BIRDS.

TETRAONIDÆ OR GROUSE.

In fulfilment of our promise stated at the conclusion of the last volume, we now proceed to consider another family among the Rasores or Gallinaceous Birds—the *Tetraonidæ* or Grouse.*

The Tetraonidæ or Grouse contain the principal part of those birds which, in sporting language, have been called *game*. Very few of these have been domesticated for the use of man, but their preservation in a wild state, and means for an abundant capture, have in all ages exercised the ingenuity of the inhabitants of civilized districts, and at this time form a large account in the luxuries of populous cities; while in countries in a state of purer nature, they are much used as a wholesome and general food.

* Mr Selby has undertaken the description of the beautiful Columbidæ or Pigeons; and Thirty Drawings from the pencil of Mr Lear are now in the hands of the engraver.

Among the true Gallinaceous birds, we find the different members living very much upon the ground, the power of flight limited, from the great weight of their bodies or unwieldiness of plumage, and very commonly an extraordinary development of the parts composing the tail. In the present family, the ground is still their prevailing habitation, though many of them frequently perch and roost on trees. Their power of flight is ample, very strong, in some, as the genus Pterocles, extremely rapid, but in a few forms almost as little used as among the Pavonidæ. Some portion of these useful birds are spread over every region of the world, and in almost all localities. The section of the grouse to which the muir-fowl of Britain and the ptarmigan belong, occupy the wild heathy districts of the temperate circle, and extend to the most barren and alpine mountains, or the extremes of polar cold. The true grouse, again, to which the European wood grouse belongs, occupy the forest and bushy grounds, and extend almost as far. The partridges prefer open countries free from wood, and draw near to cultivation; but within the tropics there are one or two forms, which, like the grouse, prefer the brush and wood, where, on the branches, they are safer from the attacks of the numerous tribes of reptiles which swarm around them. The gangas, again, or, as they have been named, the sand grouse, frequent the most barren districts in the world, the plains of India and the trackless deserts of Africa and Arabia, far from the

haunts of men, and almost as far from food and water, but endowed with powers for extensive locomotion, they traverse in a day leagues of the waste.

A few species are polygamous like the former family, the males at dawn seeking some eminence, and attracting the females by their continued calls, strutting around and displaying their plumage; but by far the greater number are monogamous, and regularly pair. The male remains near his consort during incubation, and both sedulously attend upon and defend the young, which keep together in coveys until the warmth of the following spring excites new desires, and causes their separation. All breed upon the ground, making scarcely any nest, and, with a few exceptions, they lay a number of eggs. In one or two instances, two broods are hatched in the season, but this is rare, and only continues where the regions inhabited are very warm. The cry of most of these birds is harsh, in a few deep and hoarse; it is uttered only in the breeding season, in cases of dispersion, and at morn and even like a roll-call to see that none are wanting. The plumage is subject to considerable variation between the males and females during the breeding season, and in those which inhabit northern regions or alpine districts, a change of plumage in winter, different from that of spring or summer, takes place.

Among the true grouse, such as the wood-grouse, black-cock, and beautiful birds of America, the males are distinguished by a plumage of deep glossy black

tinted with blue or green, or they have broad and conspicuous patches of these colours mingled with the other shades. The females are invariably of a brown or greyish-brown ground tint, barred or waved with black. The plumage of the young differs from both in being of paler shades, and in the markings being more irregular and confused. In the Lagopus or ptarmigan the males are deep brown or yellow, barred with black and a lighter shade; females always of a lighter tint, and the paler markings more conspicuous. In winter the change is to pure white, having the quills or tail-feathers only dark. Among the partridges and quails the difference is not generally so great, but there is always some distinguishing mark, often black or deep brown. The wattles, caruncules, and naked spaces, so frequent about the heads of the Pavonidæ, we find represented in the beautiful scarlet skin above the eyes, and which in spring becomes much developed and brightened in colour.

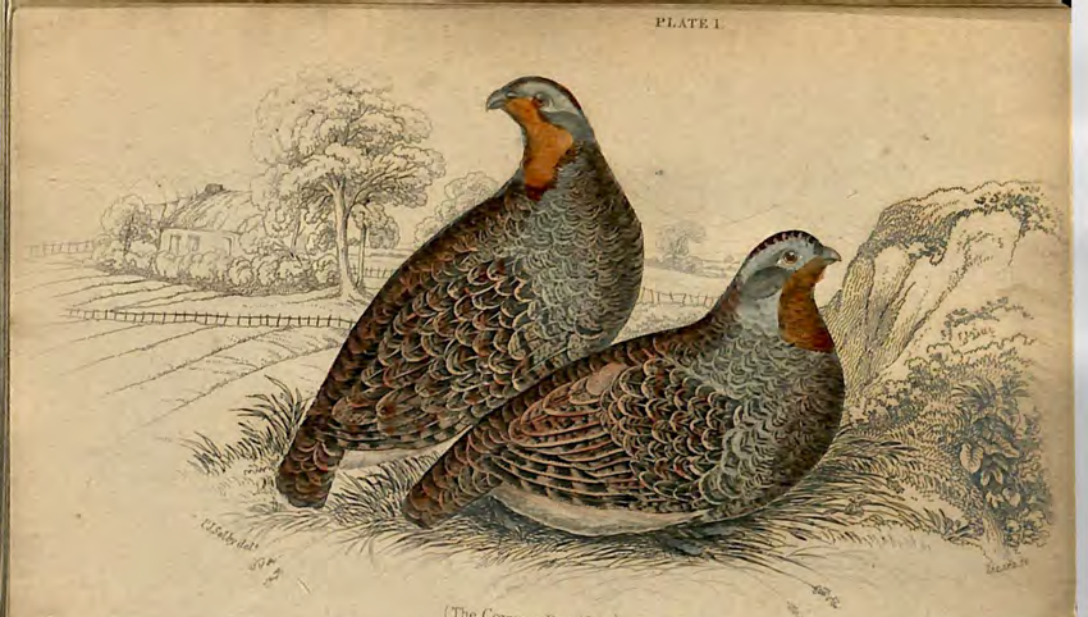
In the arrangement of these birds, Mr Swainson has pointed out what he considers may be the typical forms, although he thinks that a little examination is still necessary. They are *Perdix*, *Tetrao*, *Cryptonix*, *Ortygis*, and *Crypturus*. We shall now proceed to examine these, together with the different genera which have been established, and shall commence with

PERDIX,—Brisson.

The partridges appear to form one point of connection between the present family and that which formed the subject of our last volume, through the guinea-fowl. There are many resemblances in their habits and dispositions, harsh cry, and in numerous instances the spotted plumage. The *Perdix clamator* of Temminck may perhaps be mentioned as one of the birds forming this passage. It is remarkable for its loud harsh cry, which, says Temminck, like the guinea-fowl, it delights incessantly to repeat, particularly at daybreak and dusk, when the broods assemble to perch on the trees and woods which overhang the rivers. It is in many ways, says the same author, connected with our pintadoes, and may one day form an addition to our poultry-yard, the Cape colonists having already succeeded in rearing them in captivity.

The genus *Perdix* was established by Brisson, taking the common European partridge as typical, but it was made to contain an assemblage of birds, some of which will not even rank among the family. The quails and the strong-billed American partridges have been separated by modern systematists. Stephens made another separation in the Francolins with

spurred legs, and there are several other modified forms which will undoubtedly form subgenera, such as the large bare-necked pheasant-looking partridges of Africa, but as we do not think the present work suitable for characterising new genera, or for entering into minute distinctions, with the exception of Ortyx and the Quails, we have kept them under the denomination of *Perdix*, but will point out the most marked distinctions as they occur. We have represented as typical of the true partridges—



(The Common Partridge.)

PERDIX CINEREA.

THE COMMON PARTRIDGE.

Perdix cinerea. —ALDROVANDUS, RAY.

PLATE I.

Perdix cinerea, *Montague*, *Latham*, *Bewick*, *Selby*, &c.

A detailed description of this familiarly known bird is unnecessary. It is distributed extensively over Europe, and, according to Temminck, extends to Barbary and Egypt, where it is migratory. It is almost everywhere abundant in our own island, the more northern muiry districts excepted. It follows the steps of man as he reclaims the wastes, and delights in the cultivation which brings to it as to the labourers a plentiful harvest of grain. They are perhaps most abundant in the lower richly cultivated plains of England, but even the south of Scotland supplies many of the more northern markets with this game.

Very early in spring—the first mild days even of February — the partridges have paired, and each couple may be found near the part selected for their summer abode, long before the actual preparations for incubation has commenced. These are begun at a later period than generally imagined, and even in the beginning of September, particularly in the wilder

districts, the young are not more than half grown. The nest is formed, or rather the spot where the eggs are to be deposited, is scraped out in some ready made hollow or furrow, or placed under cover of a tuft of grass, and from twelve to twenty eggs are deposited. This mode of nidification prevails through the whole genus. No nest is made, and often no great care of concealment is displayed. In cultivated countries the young grasses and corns are their favourite breeding places, the former often fatal from the hay-harvest having commenced before the brood is hatched. The choice of a place of security for their eggs are not always the same, for Montague mentions a pair which successively selected the top of an old pollard oak, and Mr Selby writes of having known several parallel cases. It is a singular trait in the habits of many birds, that those often of a wild nature will select the most frequented parts for their nests. Both partridges and pheasants are often discovered with the nest placed within two or three feet of a highway or foot path, where there is a daily passage of men and animals. The parents, as if knowing their safety depended on sitting close, remain quiet amidst all the bustle, and often hatch in such places.

During incubation the male sedulously attends, and will generally be found near if the female is intruded upon by any of her less formidable enemies. When the brood is hatched, both lead about the young and assist them to their food; and mild and timi

as the partridge is generally described, instances have been seen where the love of offspring prevailed, and a vigorous defence was successfully maintained against a more powerful assailant. Among the many instances of such defence mentioned by various authors, we shall notice one of the latest which Mr Selby has recorded in the last edition of his History of British Ornithology*:—"Their parental instinct, indeed, is not always confined to mere devices for engaging attention; but where there exists a probability of success, they will fight obstinately for the preservation of their young, as appears from many instances already narrated by different writers, and to which the following may be added, for the truth of which I can vouch. A person engaged in a field, not far from my residence, had his attention arrested by some objects on the ground, which, upon approaching, he found to be two partridges, a male and female, engaged in battle with a carrion-crow; so successful and so absorbed were they in the issue of the contest, that they actually held the crow, till it was seized, and taken from them by the spectator of the scene. Upon search, the young birds (very lately hatched) were found concealed amongst the grass. It would appear, therefore, that the crow, a mortal enemy to all kinds of young game, in attempting to carry off one of these, had been attacked by the parent birds, and with the above singular success." Such displays are, how-

* Vol. i. p. 435.

ever, comparatively seldom witnessed or indeed exercised, for nature has implanted another device in the greater numbers of this family, in which the organs of defence are in reality weak, against their many assailants, both animal and feathered. Stratagem is resorted to, and the parent feigns lameness and even death to withdraw the aggressor. The noise and confusion which occurs when a person suddenly and unawares comes on a young brood of partridges is remarkable. The shrieks of the parents apparently tumbling and escaping away with broken legs and wings is well acted, and often succeeds in withdrawing the dog and his young attendant beyond the possibility of discovering the hiding places of the brood. When this is attained, their wonted strength is soon recovered, a flight to a considerable distance is taken, but by the time the aggressor has reached the marked spot, the bird has again circuitously come up with her charge, and is ready to act her part if again discovered.

Partridge shooting is one of the most esteemed sports of the British fowler; and when pursued in a sportsman-like manner, with finely bred dogs, is of considerable interest. The county of Norfolk has been long celebrated for the number of its partridges, as well as for her zealous agriculturist, Mr Coke, one of the first shots in the kingdom. The following account from Pierce Egan's anecdotes, will give some idea both of the abundance of the partridge, and the excess to which the sport may be carried

" The bet between Mr William Coke and Lord Kennedy, was for 200 sovereigns a-side, play or pay, who shot and bagged the greatest number of partridges in two days sporting; both parties to shoot on the same days, the 26th of September 1823, and the 4th of October in the same season. Mr William Coke to sport upon his uncle's manors in Norfolk; and Lord Kennedy in any part of Scotland he pleased. The result of Mr Coke's first day's shooting was eighty and a half brace of birds bagged. On Saturday, October 4, Mr W. Coke took the field soon after six o'clock in the morning; he was accompanied by his uncle, T. W. Coke, Esq. M.P., and by two umpires; Colonel Dixon for Mr Coke, and F. S. Blunt, Esq. for Lord Kennedy; also by two of his friends, Sir H. Goodrich, Bart., and F. Hollyhocke, Esq. He was attended by several gamekeepers, and by one dog only, to pick up the game. Several respectable neighbouring yeomen volunteered their services in assisting to beat for game, and rendered essential service throughout the day. Mr Coke sported over part of the Wigton and Egmere manors. The morning was foggy, and the turnips were so wet that the birds would not lie among them. Very little execution was done, in consequence, in the early part of the day; in the two first hours only six brace of birds were bagged. The day cleared up after eight o'clock, and the sportsman amply made up for his lost time. He found birds plentiful among Mr Denny's fine crop of turnips on the Egmere farm,

and in one and twenty acre breck of Swedes, he bagged thirty-five and a half brace of birds. He concluded his day's sport soon after six in the evening, and had then bagged eighty-eight brace of birds, and five pheasants; but a dispute having arisen among the umpires about one bird, Colonel Dixon gave the point up, and the number was ultimately declared to be eighty-seven and a half brace of birds bagged; pheasants and other game not counted in the match; so that Mr W. Coke's number of birds bagged in the two days shooting, stands 173 brace. He had much fewer shots in the second than in the first day, but he shot better, as will be seen from the comparative number of birds bagged. On Saturday he bagged 180 birds from 327 shots, which was considered good shooting in a match of this nature, when a chance, however desperate it may appear, is not to be thrown away. His uncle, T. W. Coke, Esq. loaded a great part of the gun on Saturday, and as a finale to the day's sport, shot at and killed the last bird, which his nephew had previously missed Lady Ann Coke was in the field a great part of the day; her ladyship carried refreshments for the sportsmen in her pony gig. Lord Kennedy chose for the scene of his exploits Montreith, in Scotland, a manor belonging to Sir William Maxwell, considered equal to any lands in Scotland for rearing partridges. On the first day of trial his lordship bagged fifty, and on the second, eighty-two brace, being in all 132 brace of partridges in two days."

PERDIX MONTANA (The Mountain Partridge)

Varieties of the partridge frequently occur, the most common are those varied with white, which sometimes prevails through a whole covey. Specimens entirely of a cream-colour are also not unfrequent, and here, although the tint may be said to be uniform, the various markings of the plumage appear conspicuous in different lights, as if from a variation of the structure of the feathers. But the most curious variety of the partridge is one which, by many authors, has been thought to be distinct—the *Perdix montana*. We have given a representation of this variety on our next plate, from a specimen in the Edinburgh Museum.

THE MOUNTAIN PARTRIDGE.

Perdix cinerea.—var. Montana.

PLATE II

This variety has been said to be more frequently found in alpine districts than in lowlands, but they are known to mingle occasionally with those of common plumage. The colour is remarkable to be assumed as a variety, though it is often, we may say, generally mingled with whitish or reddish-white. The whole plumage is of deep sienna-brown, and this colour, somewhat like that of the common grouse, prevails in many species entirely upon the breast,

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lower parts, and shoulders. The specimens are generally less than those of ordinary plumage.

The partridge, therefore, seems to have a more extensive range of variation than almost any bird we are acquainted with, and according to Temminck and some other authors, is somewhat influenced by almost every change of climate. Those broods which frequent and are bred on the marshy grounds of the Zuyder Zee and mouth of Meuse are less in size and of a duller tint than those found in the drier lands of Belgium. Dry or parched districts, abundance of food and water, will always influence their condition, and it is to the same causes, with variation of climate, that Temminck attributes the migrations of the partridge on some parts of the continent, and which are also said to be of a smaller size than those which do not migrate. This migratory bird has by some been also raised to the rank of a species, and named the Damascus partridge. By the modern ornithologists of this country, it is very little known, or its claims upon which even the variety rests ascertained, beyond the fact of its migration. And our latest, or indeed only authority from actual examination, is that of Temminck, who says that among many individuals he has been able to discover no good distinctions.

Our next illustration is from a very beautiful species inhabiting the continent of India; it is

PLATE III.

PERDIX PICTA.

(The Painted Partridge.)
Native of India.

THE PAINTED PARTRIDGE.

Perdix picta—JARD. AND SELBY.

PLATE III.

Perdix picta, *Jardine and Selby's Illustrations of Ornithology*, vol. i. pl. l.

THIS very beautiful species, belonging to the true partridges, is a native of the plains of India, and of late years has not unfrequently been brought in collections to this country; yet, notwithstanding, it is to be regretted that little is known of its habits. The following is a description of the specimen from the neighbourhood of Bangalore, from which the original of our plate was taken. The crown is brown, with the margins of the feathers yellowish-white; the face, region of the eyes and auriculars, pale brownish-orange; the hinder part of the neck pale buff; the centre of each feather black; the front and sides of the neck white, spotted with black; the breast, belly, and flanks, beautifully spotted with black and yellowish-white; the ground of each feather may be said to be black; and on each web there are two, and sometimes three, round spots of yellowish-white, which leave, as it were, a bar

across, and a line along the patches, those at the end have the extremity with a black margin. The upper part of the back and wings deep brown, with round spots of yellowish white, and with the margins of the feathers wood-brown; the lower part of the back and rump transversely barred with black and white; quills barred with hair-brown and pale reddish-orange; upper tail-coverts brown, delicately waved with irregular bars of black and white. Tail brownish-black, with narrow white bars, principally at the base of the feathers; vent and under tail coverts deep orange-brown.

(The Rock Partridge)
PERDIX PETROSA.

THE ROCK OR BARBARY PARTRIDGE.

Perdix petrosa.—LINNÆUS.

PLATE IV.

The Red-Legged Partridge from Barbary, *Edwards' Birds*, pl. 70.—*Lath. General History*, vol. viii. p. 293.—Perdix petrosa, *Latham.—Temminck, Pigeons et Gallinacés*, iii. 1nd. p. 727.—Perdix Gambra, *Temminck, Pigeons et Gallinacés*, iii. 368.

WITH this handsome bird we enter a small group of the partridges which are remarkable for the beautifully marked and shewy appearance of the feathers covering the flanks. The general tint of plumage is very regular throughout; the bill and legs are always red, and the latter are sometimes slightly spurred and knotted. They inhabit Europe, the north of Africa, and India. The most familiar example will be the common Red-legged, French, or, as it is sometimes termed, Guernsey Partridge; but we have selected two equally beautiful, but less known birds, as examples of it.

The Rock or Barbary Partridge inhabits the most southern countries of Europe, stretching into Spain, and thence upon the coast of Africa. It is also met

with upon the banks of the Gambia, and in the island of Teneriffe. It delights in rocky districts, and the rugged precipices of the southern Alps, and seldom or never strays down upon the plains. The accompanying figure will convey an idea of the colours of this species. It is distinguished from all the others by the patch of deep chestnut upon the sides of the neck, beautifully relieved by the clear white spots. It is not very commonly met with in collections, being like almost all the birds of southern Europe, more difficult to be procured than those of more distant countries.

The next we shall mention is

Lizars sc.

(The Chukar Partridge.)

PERDIX CHUKAR.

THE CHUKAR PARTRIDGE.

Perdix chukar.—LATHAM.

PLATE V.

Perdix chukar, *Gould's Century*, vol. lxxi.—*Gray's Illustrations of Indian Zoology.*

THE general colour of the upper plumage is ash-grey, tinged with a shade of purple, particularly across the centre of the back; a deep black line passes across the forehead through the eyes, and extends downwards in a crescent form upon the sides of the neck and chest, the throat, and inside of the circle, being pale yellowish-white. The breast is nearly of the same colour with the centre of the back, but paler, and the rest of the lower parts are of a dull yellow. The conspicuous barring on the sides is alternately yellowish-white, chestnut, and black.

We are indebted to Mr Gould for the use of his illustration, taken from a Himalayan specimen. That gentleman also tells us that specimens are alive in the Zoological Garden, where they have the same pugnacious and irritable temper of the Common Red-

legged Partridge, being perpetually at war with their fellow captives.

These figures will give a tolerable idea of this small group. The others belonging to it are the Greek Partridge, Perdix saxatilis of authors, so very closely allied to the last, as by many to be considered identical; the distinctions have never been clearly pointed out, and it is a bird very likely to extend to India. Plate V. will shew what has been considered P. Chukar.

The Greek Partridge is found abundantly upon the German Alps of middling height, never descending to the plains or low valleys. They remain in small coveys until the breeding season, when they pair like the others, the female making her nest in more concealed situations under the roots of trees, or among stones or rocks, covered with brush. The eggs are yellowish-white, indistinctly blotched with reddish-yellow. They scarcely stretch into France, being found only sparingly in some of the higher mountainous provinces. It is most abundant in the Ottoman empire, in the Greek Islands, and in the south of Italy.

The other is the Perdix Rufa or Red-legged Partridge. The last has now been introduced into several of the southern counties of England, and appears to succeed and multiply. As game, however, they are esteemed neither by the sportsman or epicure, their flesh being much drier than that of the ordinary bird, while their skulking habits upon

alarm, the great speed with which they run, and their unwillingness to take flight, prevents them being sought after in the field. Both the last are occasionally subject to be spotted, and nearly white varieties occur.

The next partridge we shall notice is one of the most beautifully marked.

THE COMMON FRANCOLIN.

Perdix francolinus—LATHAM.

PLATE VI.

Perdix francolinus, *Latham, General History*, viii. p. 271. —*Le Francolin, Buffon, Pl. enluminée*, M. and F. pls. 147 and 148.—*Francolin à Colier Rousse, Temminck, Pigeons et Gallinacés*, iii. p. 340.

THE Common Francolin has been placed at the extremity of those with one or more spurs upon the legs, of a very much barred and spotted plumage, the bill stronger, the tail more lengthened, and forms the genus Francolinus of Stephens. All the members of it perch as well as frequent the ground, and in some of the species, the legs are armed with spurs of very great strength and sharpness. We have represented the common bird, as it is the only European species, though not the most typical.

The Francolin is a native of the south of Europe, Sicily, and the islands of the Greek Archipelago, Africa, and India, where it inhabits the marshy grounds, and thence has received the name of Meadow Partridge. In Africa, particularly upon the coast of Barbary, and in India, it is every where esteemed for its excellency at the table, and ad-

PERDIX FRANCOLINUS (The Common Francolin.)
Native of Europe

mired for its fine plumage. It is not a large species, the male scarcely exceeding twelve inches in length; the colouring is black, white, rufous, and yellowish-brown, disposed in decided and contrasted markings of large patches, spots, or bars, but yet so distributed as to want all harshness, and to have a chaste and blended appearance. The female wants all the deep black and white markings of the male, as well as the rufous collar; the ground colour of the plumage is a yellowish-brown, waved and barred with umber-brown, and having the markings of the wings and tail nearly the same as in the male, but of a paler colour.

Our next bird is a very singularly formed species It is

THE SANGUINE PARTRIDGE.

Perdix cruentatus—TEMMINCK.

PLATE VII.

Phasianus cruentatus, *Trans. of Lin. Soc.* vol. xiii. p. 237 —Sanguine Pheasant, *Lath. General History*, p. 205.— Francolin ensanglante, Perdix cruentata, *Temminck, Pl. Coloriées*, pl. 332.

THIS bird has also been placed among the Francolins, on account of the spurred tarsi, but it is probable it will stand ultimately as some subgenus, being one of those birds which are almost neither one thing nor another. It forms the connexion in some points between the present family and the Pavonidæ. The remarkable parts of its structure are the lengthened form of the feathers of the head and neck, the brilliant tints of the plumage, and, like the polyplectron, having sometimes one, two, or three spurs upon the tarsi, which are themselves more slender and lengthened than those of most of the others. It inhabits the upper parts of the unexplored districts of Nepaul, and adds another to the many splendid and peculiar gallinaceous birds, which are there so abundant.

It was first described in the Transactions of the

PLATE VII

(The Sanguine Partridge.)

FRANCOLINUS CRUENTATUS

Edmd Bury V. Moorcroft

Native of Nepaul

Linnean Society, under the name of Phasianus, a name at once implying its connections. A second description and figure appeared in the Planches Coloriées of Temminck, and our present representation is from a specimen in the Edinburgh Museum. The male is about 16 inches in length, and the accompanying Plate will sufficiently detail the colours without a description. It has received its specific name from the blotches of red upon the breast, and the rich crimson which adorns the tail and its coverts. The legs are irregularly spurred, two sometimes on one and only one on the other. In Temminck's figure two are represented on the one leg, and on the other four, in two pairs. The female is said to resemble the male in the colours, except in being duller in hue; the size is less and the legs are without spurs. This is rare bird in collections.

It would be impossible in our present limits to describe every species of the larger groups of this family, but before proceeding to the quails, we shall notice one or two other birds. There is a beautiful bird from the deserts of Acaba in Arabia, which Temminck has dedicated to Mons. Hey, the companion of Ruppel. *Perdix Heyii* is of size intermediate between the common partridge and the quail, and is now mentioned from the resemblance which it bears to the Red-legged Rock and Barbary partridges, in the nearly uniform tint of the upper plumage; the feathers on the flanks are also bordered

with black upon the sides, while the legs, feet, and bill are bright red. The tail, rump, and secondaries, again, shew the beautiful delicate barring seen in those parts of the common francolin and painted partridge.

There is a small Indian group among the partridges which also deserves notice. The wings are more ample and rounded, the tail short, the body more clumsy; the bill and legs strong, and the feet large. They inhabit principally the Indian islands, frequenting the skirts of the mountain forests. The *Perdix Javanica* of Latham, *Perdix megapodia*, Temminck, and *Perdix personata*, Horsfield, are examples of this form. Another form we noticed before was the pheasant-like partridges of Africa, so similar to the females of these birds, that, with the addition of the tail, they might be passed off to an ordinary observer. *Perdix bicalcarata* of Latham will exemplify this. To these perhaps might also be added another remarkable bird, the hackled partridge of Latham, of which there seems an uncertainty regarding its native country. Dr Latham's bird was in the Leverian Museum, and was supposed to have come from the Cape of Good Hope; while Temminck, upon the authority of Sonnerat, makes it a native of Eastern Asia. The most remarkable feature in the plumage of this otherwise soberly dressed bird is in the feathers on the back and sides of the neck and upper part of the back being of an inch and half long, and hackle-shaped, as in the common cock, and in their colour

they possess the changing greenish tints of the cocks and pheasants. It is a very rare bird, and much to be regretted there is nothing known of its habits.

We shall now proceed to the Quails, and as characteristic of these neat little birds have represented

THE COROMANDEL QUAIL.

Coturnix textilis.—TEMMINCK.

PLATE VIII.

Coromandel Quail, *Latham, General History*, viii. p. 310.—Caille Nattée, Coturnix textilis, *Temminck, Pigeons et Gallinacés*, iii. p. 512. *Pl. Coloriées*, pl. 35.

THE Quails, forming the genus *Cotúrnix* of moderns, are at first sight so similar to the partridges, that they are not to be distinguished without a knowledge of their habits, and examination of their forms. In the bill and legs there are slight modifications, but the form of the wing is quite different, the first three quills being longest, while in the partridges the third is the longest, and a rounded wing of less power is the consequence. It may be recollected that, though the partridges were said to migrate in some countries, the migration is comparatively very partial, and often only from one part of a continent to another; on the other hand, almost all the quails migrate to a certain distance, and hence perform lengthened journeys often across the seas. In their habits they also shew considerable difference, as they never perch. They often assemble in large flocks after the breeding season; and al-

COTURNIX TEXTILIS. (The Coromandel Quail.)

Size of Nat. in Museum.

Native of India.

though they pair regularly, so soon as the female commences to sit, she is left alone, and the male attends no longer, nor afterwards assists in protecting the brood. They delight in cultivated countries, and never frequent woods. They are found in Europe, Asia, Africa, and New Holland. The allied birds of America come under a different section.

The pretty little species figured will give an exact idea of the form of the quails. It is rather less than the European species, being in length only about six inches. The upper parts somewhat resemble those of the common bird, but are more broadly marked, while the deep black markings on the lower parts at once distinguish it, and are beautifully relieved from the paler parts of the breast and belly. The female differs from the male in wanting the greater part of the black on the lower parts, indications of the two bands on the throat being only seen. The breast is reddish-brown, the feathers with a black centre, and the other lower parts are of a dull white. This quail seems abundant, and is pretty generally distributed over the continent of India.

Among the quails there are many beautifully marked species, all of diminutive size. We shall only, however, be able to notice that of Europe, an occasional visitor to Britain.

THE COMMON QUAIL

Seems to be generally distributed over the old world, though, in the south of Europe, it is perhaps as abundant as elsewhere. In Britain they may now be termed only an occasional visitant, the numbers of those which arrive to breed having considerably decreased, and they are to be met with certainty only in some of the warmer southern or midland counties of England. Thirty years since they were tolerably common and regular in their returns; and even in the south of Scotland a few broods were occasionally to be found. In these same districts they are now very uncertain. We have known of broods twice, and occasionally have shot a straggler apparently on its way to the south. They are extremely difficult to flush after the first time. The nest is made by the female, but, like the partridges, the eggs are deposited almost on the bare ground; these, also, unlike the uniform tint which we find prevailing in those of the true partridges, are deeply blotched with oil-green, and, except in form, are somewhat similar to those of the snipe. In France they are very abundant; and besides supplying the markets of that country, thousands are imported alive by the London poulterers, and fattened for the luxury of the metropolis.

They are taken by nets, into which they are decoyed

by imitating their call. On the coast of Italy and Sicily, and all the Greek islands, they arrive at certain seasons in immense numbers. An hundred thousand are said to have been taken in one day. They are run after during the flight like the passenger pigeons of America, and a harvest is gathered when the numbers are greatest. In Sicily, crowds of all ages and degrees assemble on the shore. The number of boats is even greater; and enviable is the lot of the idle apprentice, who, with a borrowed musket or pistol, no matter how unsafe, has gained possession of the farthest rock, where there is but room for himself and his dog, which he has fed with bread only, all the year round for these delightful days, and which sits in as happy expectation as himself for the arrival of the quails.* Ortygia was named from them; and so abundant were they on Capri, an island at the entrance of the Gulf of Naples, that they formed the principal revenue of the bishop of the island. From twelve to sixty thousand were annually taken; and one year the capture amounted to one hundred and sixty thousand. In China, and in many of the eastern islands, and Malacca, they are also very abundant, performing regular migrations from the interior to the coast. Here they are domesticated along with a small species of Ortygis, and trained to fight. Large stakes are risked upon the result, as in the cockpit. They are also used by the Chinese to warm their hands in cold weather, their bodies being thought

* Galt's Travels.

to contain a large proportion of animal heat, from the pugnacious disposition of their tempers.

The common quail has the crown of the head and back of the neck black, each feather margined with chestnut; and down the centre of the head and neck there is a cream-yellow streak. Over each eye, and proceeding down the neck, is a white streak: chin and throat chestnut-brown, mixed with blackish-brown. Back scapulars and wing-coverts black, the feathers margined and varied with brown, and each having its shaft and central parts sienna-yellow. The breast and belly are pale buff or orange, the shafts and margins of the feathers yellowish-white. Tail blackish-brown, with the shafts, tips, and base cream-yellow. In the female there is no black or brown on the neck and throat. Her breast is spotted with blackish-brown, and the general tints of her plumage are paler. Pure white on spotted varieties sometimes occur.

We must now describe a singular American bird, of whose station we are by no means certain.—It is

ATTAGIS LATREILLII

Swains. Zo

(Latreille's Attagis)

Native of Chili

LATREILLE'S ATTAGIS.

Attagis Latreillei.—LESSON.

PLATE IX.

L'Attagis de Latreille, Attagis Latreillei, *Less. Illustrations de Zoologie.*

Two species of these curious birds have been figured by Lesson, the one in his "Zoological Century," the other in his "Illustrations," the latter of which has now served for our copy. Both are from Chili; but we regret that nothing has been communicated regarding their habits, or the districts in which they are found, and conjecture only is set to work to place them in their proper situation. The present species is about eight inches in length, therefore not much exceeding the size of the common quail. The bill appears formed somewhat like that of pterocles, but the feet and tarsi are unplumed. It is probable that they may hold the same place in the vast South American plains, which the ganga does in the more sterile deserts of the old world. The tints of the plumage in both are blended with chaste shades of brown.

There is another bird of which Lesson and Esch-

scholtz make a genus,—*Tinochorus*, which approaches near to this, and is also a native of South America; but from want of materials, it can only be now indicated.

When these are better known, we have no doubt of their proving very interesting forms, and filling up some blank in the present family of birds. We shall now proceed to a small group, better, though but imperfectly, known, the American Quails, included under the genus *Ortyx*. The first we shall notice is

ORTYX BOREALIS. (The Virginian Quail.)

THE VIRGINIAN QUAIL OR PARTRIDGE.

Ortyx Virginianus.—BONAPARTE.

PLATE X.

Quail or Partridge, Perdix Virginianus, *Wilson's American Ornithology*, pl. xlvii.—Perdix borealis, *Temminck, Pig. et Gallin.*—Ortyx borealis, *Stephens, Continuation.*—Ortyx Virginianus, *Bonaparte, Synopsis*, p. 124.

THE genus Ortyx was formed by Stephens, the continuator of Shaw's General Zoology, for the reception of the thick and strong-billed partridges of the new world. They hold the same place there with the true partridges, francolins, and quails of the other parts of the globe, living on the borders of woods, among brushwood, or in the thick grassy plains, and occasionally frequenting cultivated fields in search of grain or roots. During night they generally roost on trees, and occasionally perch on them by day, particularly when alarmed, when they immediately take refuge, aud even walk with ease upon the branches. Their general shape is robust, the bill is strong, and apparently fitted for a mode of feeding requiring considerable strength, such as the digging up of bulbous or tuberous roots. The colours of the plumage are generally different shades

of brown, red, orange, grey and white. The head is almost always crested.

This bird is best known by the description of Alexander Wilson. Audubon has also figured a whole covey on one of his immense plates. It is a general inhabitant of North America, from the northern parts of Canada and Nova Scotia, to the extremity of the peninsula of Florida. They become very familiar, frequenting the vicinity of well cultivated plantations; but when alarmed, seek shelter in the woods, perching on the branches, or secreting themselves among the brushwood. Where not too much persecuted by the sportsman, they become almost half domesticated, approach the barn, particularly in winter, and sometimes in that severe season, mix with the poultry to glean up a subsistence. Immense havock is at this season made among them with the gun and by snares, and they are sold in the markets from twelve to eighteen cents each.

They begin to build early in May, and, according to Wilson, the nest is made most carefully. It is formed on the ground, usually at the bottom of a thick tuft of grass, that shelters and conceals it; the materials are leaves and fine dry grass, in considerable quantity; it is well covered above, and an opening left on one side for entrance. The female attends the young when hatched with great care, and performs the same part of counterfeiting lameness with our own partridge. They have been frequently brought up by placing the eggs under the common hen, and

become very domesticated, but always desert in the first spring, when the season of incubation commences.*

Among the many methods taken to capture these birds, one related by Audubon seems eminently successful. A cylindrical net is used thirty or forty feet in height, and about two in diameter, except at the mouth, where it is wider. This is fixed to the ground with the mouth open, and two additional pieces of net are fixed at each side, to enlarge as it were the entrance. Into this the birds are driven by a number of persons on horseback, who surround the covey when discovered. Fifteen or twenty partridges are thus often caught at one driving, and sometimes many hundreds during the day.†

The Virginian partridge has been attempted to be introduced in several parts of the European continent, but we are uncertain with what success. They have also been tried in some of the English counties.

Our next Plate exhibits one of the most beautiful of the genus—

* Wilson's North American Ornithology. † Audubon

THE CALIFORNIAN ORTYX.

Ortyx Californica.—STEPHENS.

PLATE XI.

Californian colin, Ortyx Californica, *Stephens, Continuation*, vol. xi. p. 384.—Californian Quail, *Gardens of Zoological Society*, ii. p. 29. a beautiful woodcut.

THIS graceful and beautifully marked species is found in the low woods and plains of California, and was met with during both the voyages of La Perouse and Vancouver; and a figure is given in the atlas of plates accompanying the former. A single specimen, part of the produce of the latter voyage, was deposited in the British Museum, and served for the descriptions and figures given in this country, previous to the return of Captain Beechey from his voyage to the Pacific, &c., who brought with him specimens alive. One only survived its arrival to the Zoological Gardens, but seemed to bear the change of climate perfectly.

The general colour of the upper plumage is a brownish-grey. The feathers on the back and sides of the neck have a deep black margin, and often a white tip. The throat is deep rich black, but between and the angular markings of the sides there

PLATE II.

ORTYX CALIFORNICA (The Californian Ortyx.)

Edinr. Roy. D. Museum.

is a crescent band of pure white. The feathers of the lower part of the belly are deeply margined with black, and the long plumes of the flanks are marked along the centre with a stripe of yellow. But the beautiful and remarkable adornment is the crest upon the crown, composed of several feathers, narrow at the base broadening towards the tip, and folded as it were together from the shaft. They are of a dull rich black and lie generally backwards, but can be raised at pleasure; and upon any excitement are erected, almost bending forward upon the front.

THE LONG-TAILED ORTYX.

Ortyx macroura.—JARD. and SELBY.

PLATE XII.

Ortyx macroura, *Illust. of Ornithol.* pl. xlix.

ON this Plate we have figured a species of Ortyx, of a form at variance with those already noticed, being remarkable for its long and broadly formed tail. We regret that nothing is known of its habits. It is a native of Mexico, and the only specimen we know of was purchased at the sale of Bulloch's Mexican collection. Its length is about 13 inches, the bill very strong, and with the legs orange-red. The feathers on the crown, throat, and cheeks are black, those on the head lengthened into a crest and tipped with reddish-brown. A line of reddish-white extends above the eyes and auriculars, and loses itself on the sides of the neck; another of the same colour runs under the eyes upon the auriculars. The back, sides of the neck, and upper parts of the breast, are reddish-brown; the middle of the belly and vent silvery grey, passing into bluish-grey, and minutely freckled with black. The rest of the upper parts are wood-brown, barred and spotted with black, and

ORTYX MACROURA (The Long-tailed Ortyx)

blotched with large spots of yellowish-white. The length of the tail-feathers is 5½ inches, they are broad and rounded.

Several other species are known. Two were brought to this country by Mr Douglas from his journey to Columbia; one has been denominated *O. picta*, which is also crested. This bird, says Mr Douglas, congregates in vast flocks in the interior of California from October to March, and seem to live in a state of perpetual warfare. Dreadful conflicts ensue between the males; which not uncommonly end in the destruction of one or both combatants, if we may judge from the number of dead birds daily seen plucked, mutilated, and covered with blood. When feeding they move in compact bodies, each individual endeavouring to outdo his neighbour in obtaining the prize. During winter, when the ground is covered with snow, they migrate in large flocks to more temperate places in the vicinity of the ocean.

Ortyx Douglasii is another bird said to be distinct, so named by Mr Vigors, and brought by Mr Douglass nearly from the same country. *Ortyx Montesumæ, capistrata,* and *Sonnini,* are all rare and beautiful species.

From these birds we shall now commence an account of the true grouse, *Tetrao,* the typical group of the family.

GROUSE.

By the word Grouse, we, in general language, are most apt to associate our ideas with the common Muirfowl. But in the technical terms of Ornithology, the generic name *Grouse* and *Tetrao* is restricted to those bearing the form of the European wood-grouse, Dusky grouse of America, &c. They are the largest birds of the family, of a very round and powerful form, and frequent heathy forests in preference to the wild and open muir, perch and often roost on trees, where young shoots and tender bark also supply them with food; and although the legs are plumed with short feathers, the toes are naked. The tail is composed of broad feathers and is proportionally long and rounded. They are mostly polygamous, and the females and young differ considerably from the males, the plumage of the former being shades of brown and tawny, with black bars and markings, the colours of the latter distributed in broad masses of black, glossy green or steel-blue, and deep brown. They inhabit North America and Europe, those of the latter country extending into Northern Asia.

TETRAO UROGALLUS.
(The Wood Grouse or Capercailzie)

Native of Northern Europe.

THE WOOD GROUSE OR CAPERCAILZIE.

Tetrao urogallus.—LINNÆUS.

Tetrao urogallus, *Linnæus.*—Wood Grouse, *Pennant.*—Tetrao auerhan, *Temminck*, *Manuel*, ii. p. 457.

PLATE XIII.

AT the head of this section we place the capercailzie—the "giant grouse" as he is somewhere termed. First in size and first in noble bearing, his strong and hooked bill and robust form resemble more a bird of prey than one of the Gallinæ. The capercailzie was certainly the noblest of the British feathered game, but the attributes of strength, size, and beauty, have proved his destruction, and they have been for many years extinct. In ancient times they were tolerably abundant in the primeval forests of Scotland and Ireland. From the latter they appear to have been entirely extirpated at a very early period; while in Scotland the destruction was more gradual, but they dwindled away, and the last specimen is recorded from fifty to sixty years since to have been killed in the neighbourhood of Inverness. There is, however, a prospect of the species being again introduced to the Scottish forests, and the following interesting account of the attempts which

have been made at Mar Lodge, and of the habits of the female and young, will be read with interest.

"I was wading down the Dee one fine afternoon, a little below Mar Lodge, and with a lighter pannier than usual, when I heard the cry of a bird to which I was unaccustomed, and my bad success in that day's angling, induced me the more readily to diverge from the 'pure element of waters,' to ascertain what this might be. I made my way through the overhanging wood for a few hundred yards, and soon after reaching the road, which runs parallel with the river on its right side, I observed a wooden palisade, or enclosure, on the sloping bank above me. On reaching it, I found it so closely boarded up, that I had for a time some difficulty in descrying any inmates, but my eye soon fell upon a magnificent bird, which at first, from its bold and almost fierce expression of countenance, I took rather for some great bird of prey than for a Capercailzie. A few seconds, however, satisfied me, that it was, what I had never before seen, a fine living example of that noble bird I now sought the company of Mr Donald Mackenzie. Lord Fyfe's gamekeeper, the occupant of the neighbouring cottage. He unlocked the door of the fortress, and introduced me to a more familiar acquaintance with its feathered inhabitants. These I found to consist of two fine capercailzie cocks and one hen, and the latter, I was delighted to perceive, accompanied by a thriving family of young birds, active and beautiful.

" The first importation of these capercailzies arrived from Sweden about the end of the year 1827, or early in January 1828. It consisted of a cock and hen, but the hen unfortunately died after reaching Montrose Bay. As the male bird alone arrived at Braemar, the experiment was judiciously tried of putting a common barn-door fowl into his apartment during the spring and summer of 1828. The result was, that she laid several eggs, which were placed under other hens, but from these eggs only a single bird was hatched, and when it was first observed it was found lying dead. It was, however, an evident *mule*, or hybrid, and shewed such unequivocal marks of the capercailzie character as could not be mistaken.

" The second importation likewise consisted of a cock and hen, and arrived safely in this country in January or February 1829. The female began to lay in the ensuing April, and laying in general an egg every alternate day, she eventually deposited about a couple of dozen. She shewed, however, so strong a disposition to break and eat them, that she required to be narrowly watched at the time of laying, for the purpose of having them removed, for otherwise she would have destroyed the whole. In fact, she did succeed in breaking most of them, but eight were obtained uninjured. These were set under a common hen, but only one bird was hatched, and it died soon after. In the spring of 1830, the hen capercailzie laid eight eggs. Of these she broke only one, and, settling in a motherly manner on the

other seven, she sat steadily for five weeks. On examining the eggs, however, they were all found to be addle.

"In the early part of 1831, three apartments were ingeniously formed adjoining one another. The hen was placed in the central chamber, between which and the enclosure on either side, each of which contained a male, there was an easy communication; so contrived however, that the female could have access to both the males, whilst they, from their greater size, could neither approach each other, nor disturb the female as long as she chose to remain in her own apartment. In May and June of that year she laid twelve eggs, seven of which were set under a common hen. Of these, four were hatched in an apparently healthy state, one was addle, and the other two contained dead birds. Of those left with the capercailzie hen, she broke one, and sat upon the other four, of which two were hatched, and the other two were found to contain dead birds. Of the two hatched one soon died. Both the barn-door hen and the female capercailzie sat twenty-nine days, from the time the laying was completed till the young were hatched; and Mr Cumming calls my attention to the fact, that there were birds in all the eggs of this year's laying except one.

"My visit to Braemar took place about the first week of last August. I think all the five young were then alive, and although only a few weeks old, they were by that time larger than the largest moor-

game. I had no opportunity of handling them, or of examining them very minutely, but the general view which I had of them, at the distance of a few feet, did not enable me to distinguish the difference between the young males and females. They seemed precisely the same at that time both in size and plumage, although I doubt not the male markings must have soon shewn themselves on the young cocks. The single surviving bird of those hatched by the mother died of an accident, after living in a very healthy state for several weeks. Two of those hatched by the common hen died of some disease, the nature of which is not known, after lingering for a considerable time. It follows that there are only two young birds remaining. These are both females, and when I last heard of them some months ago, were in a thriving condition.

"The whole progeny were fed at first, and for some time, with young ants,—that is, with those whitish grain-shaped bodies, which are the larvæ and crysalids in their cocoons of these industrious creatures, though commonly called ant's eggs. At that period they were also occasionally supplied with some tender grass, cut very short. As soon as they had acquired some strength, they began to eat oats and pot barley, together with grass and the various kinds of moss. They are now fed like the three old birds, chiefly on grain and heather tops, with the young shoots, and other tender portions of the Scotch fir. I am informed that the distinction between the

sexes had become very obvious before the death of the young males. The plumage of the latter was much darker, their general dimensions were greater, their bills larger and more hooked. These characters became very apparent during November and December.

" The old males have never yet had access to the young birds, so that it has not been ascertained whether they entertain any natural regard for their offspring, or would manifest any enmity towards them. From the continued wildness of the old birds, especially the males, it was found difficult to weigh them, without incurring the risk of injuring their plumage. However, the male which arrived in 1829, and which then appeared to be a bird of the previous year, was lately weighed, and was found to be eleven pounds nine ounces avoirdupois. Judging from appearances, it is believed that the weight of the old hen would not much exceed one half. There is, indeed, a striking disparity in the dimensions of the sexes in this species.

" The intention is, as soon as some healthy broods have been reared in confinement, to liberate a few in the old pine woods of Braemar, and thus eventually to stock with the finest of feathered game the noblest of Scottish forests." *

In addition to the forests of the north of Britain, the wood-grouse inhabits those of the continent of Europe, and is indeed more abundant there than ever it

* James Wilson, in Jameson's Journal for July 1832.

could have been in this country. It also seems to extend to several districts of Northern Asia. It is perhaps most abundant in some parts of Russia, Norway, and Sweden, and it is from thence that an annual supply of this and another bird, the *Tetrao medius*, is furnished to the London markets. In these countries they frequent the deep and far-spreading forests of pine, feeding on the young shoots and cones, the catkins of the birch, and berries of the juniper which form the underwood. They are polygamous, and at the commencement of incubation, the male places himself conspicuously, and attracts the female by his loud cries, "resembling *Peller, peller, peller*, and various attitudes. On hearing the call of the cock, the hens, whose cry in some degree resembles the croak of the raven, or rather, perhaps, the sounds *Gock-gock, gock*, assemble from all parts of the surrounding forest. The male bird now descends, from the eminence on which he was perched, to the ground, where he and his female friends join company."* When the females really commence incubation, they are forsaken, the males skulking among the brushwood and renewing their plumage, while she attends to the hatching and rearing of her progeny.

The male is nearly three feet in length, and gains a weight of sometimes fifteen pounds. The feathers of the head and cheeks are elongated, and during his displays of courtship, the former are raised, and those on the cheeks brought forward. The back of the

* From Lloyd's Northern Field Sports.

neck, back and sides, are, when minutely observed, delicately varied with brown, grey, and black. The lower part of the breast and belly are black, generally interspersed with a few white feathers, and the forepart of the breast is of a rich glossy green, the feathers thick and compact, and when seen in some lights, emit a very brilliant lustre of golden green and blue, whence the old appellation of "peacock of the woods." The female is considerably less, bearing even more disproportion in size than many of the others; the colours of the plumage disposed in crescent markings of black upon a ground of rich brown. For the first autumn, the young males are nearly similar to the females, the brown tint being rather deeper; but before the ensuing spring, they receive the greater part of their adult plumage.

The wood grouse is extremely shy, and in Germany he is reckoned an excellent hunter who can say that he has killed twenty or thirty males. Temminck mentions one person particularly celebrated, who had shot fifty. They can only be approached during the time when the male calls the hens around him, and even the greatest delicacy and caution of approach is necessary. They are reckoned royal game, and the female is prohibited, under a severe penalty, to be shot.* The great numbers, however, of indiscriminate sexes which are brought to London, shew that this prohibition is not everywhere attended to, and that the approach of the males is

* Temminck.

also not so difficult. Neither is the season attended to, for in Norway particularly, the female is sometimes shot from her nest.

In addition to what has been given of the habits of this noble bird, it will be interesting to insert the following from Lloyd's "Northern Field Sports."

"The capercailzie is often domesticated in Sweden; indeed, at both Uddeholm and Risäter, as well as in other places, I have known these birds to be kept for a long period in aviaries built for the purpose. These were so perfectly tame as to feed out of the hand. Their food principally consisted of oats and of the leaves of the Scotch fir, large branches of which were usually introduced into their cages once or more in the course of the week. They were also supplied with abundance of native berries, when procurable. They were amply provided at all times with water and sand: the latter of which was of a rather coarse quality, and both were changed pretty frequently.

"In farther corroboration of the fact, that the capercailzie will breed when in confinement, I make the following quotation from Mr Nilsson's work. That gentleman's authority was the Ofwer Director af Uhr; and the birds alluded to were at a forge in the province of Dalecarlia.

"'They were kept together during the winter in a large loft over a barn, and were fed with corn, and got occasionally a change of fresh spruce, fir, pine, and juniper sprigs. Early in the spring, they were

let out into an inclosure near the house, protected by a high and close fence, in which were several firs and pines, the common trees of the place. In this inclosure they were never disturbed; and during the sitting season no one approached, except the person who laid in the meat, which at that time consisted of barley, besides fresh sprigs of the kinds before mentioned. It is an indispensable rule that they shall have full liberty, and remain entirely undisturbed, if the hens are to sit and hatch their young. As soon as this had occurred, and the brood were out, they were removed to the yard, which was also roomy, and so closely fenced that the young ones could not escape through; and within this fence were hedges and a number of bushes planted. Of the old ones, one of the wings was always clipped, to prevent their flying. I have seen several times such broods both of black game and capercailzie, eight to twelve young ones belonging to each hen. They were so tame, that, like our common hens, they would run forward when corn was thrown to them. They should always have a good supply of sand and fresh water.'

"According to Mr Nilsson, 'when the capercailzie is reared from the time of being a chicken, he frequently becomes as tame as a domestic fowl, and may be safely left by himself. He however seldom loses his natural boldness; and, like the turkey cock, will often fly at and peck people. He never becomes so tame and familiar as the black cock.

" ' Even in his wild state, the capercailzie frequently forgets his inherent shyness, and will attack people when approaching his place of resort. Mr Adlerberg mentions such an occurrence. During a number of years, an old capercailzie cock had been in the habit of frequenting the estate of Villinge at Wermdö, who, as often as he heard the voice of people in the adjoining wood, had the boldness to station himself on the ground, and during a continual flapping of his wings, pecked at the legs and feet of those that disturbed his domain.

" ' Mr Brehm, also, mentions in his Appendix, page , a capercailzie cock that frequented a wood a mile distant from Renthendorf, in which was a path or roadway. This bird, so soon as it perceived any person approach, would fly towards him, peck at his legs, and rap him with its wings, and was with much difficulty driven away.'

" At the period of the year of which I am now speaking, I usually shot the capercailzie in company with my Lapland dog, Brunette, (a cocker,) of which I have already made mention. She commonly flushed them from the ground, where, for the purpose of feeding upon berries, &c. they are much during the autumnal months. In this case, if they saw only the dog, their flight in general was short, and they soon perched in the trees. Here, as Brunette had the eye of an eagle and the foot of an antelope, she was not long in following them. Sometimes, how-

ever, those birds were in the pines in the first instance; but, as my dog was possessed of an extraordinarily fine sense of smelling, she would often wind, or, in other words, scent them from a very long distance.

"When she found the capercailzie, she would station herself under the tree where they were sitting, and, by keeping up an incessant barking, direct my steps towards the spot. I now advanced with silence and caution; and as it frequently happened that the attention of the bird was much taken up with observing the dog, I was enabled to approach until it was within the range of my rifle, or even of my common gun.

"In the forest, the capercailzie does not always present an easy mark; for, dipping down from the pines nearly to the ground, as is frequently the case, they are often almost out of distance before one can properly take aim. No. 1 or 2 shot may answer very well, at short range, to kill the hens; but for the cocks, the sportsman should be provided with much larger.

"Towards the commencement of, and during the continuance of the winter, the capercailzies are generally in packs; these, which are usually composed wholly of cocks, (the hens keeping apart,) do not separate until the approach of spring. These packs, which are sometimes said to contain fifty or a hundred birds, usually hold to the sides of the numerous

lakes and morasses with which the northern forests abound; and to *stalk* the same in the winter-time with a good rifle is no ignoble amusement.

"Among other expedients resorted to in the northern forests, for the destruction of the capercailzie, is the following:—During the autumnal months, after flushing and dispersing the brood, people place themselves in ambush, and imitate the cry of the old or young birds, as circumstances may require. By thus attracting them to the spot, they are often enabled to shoot the whole brood in succession. The manner in which this is practised may be better understood from what Mr Greiff says on the subject.

"'After the brood has been dispersed, and you see the growth they have acquired, the dogs are to be bound up, and a hut formed precisely on the spot where the birds were driven from, in which you place yourself to call; and you adapt your call according to the greater or less size of your young birds. When they are as large as the hen, you ought not to begin to call until an hour after they have been flushed; should you wish to take them alive, the common net is placed round him who calls. Towards the quarter the hen flies, there are seldom to be found any of the young birds, for she tries by her cackling to draw the dogs after her, and from her young ones. As long as you wish to shoot, you must not go out of your hut to collect the birds you have shot. When the hen answers the call, or lows like a cow, she has either got a young one with her,

or the calling is incorrect; or else she has been frightened, and will not then quit her place. A young hen answers more readily to the call than an old one.'

"In other instances, the capercailzie is shot in the night-time, by torch-light. This plan, which is said to be very destructive, is, I believe, confined to the southern provinces of Sweden, for in the more northern parts of that country I never heard of its being adopted.

"In Smaland and Ostergothland, this is said to be effected in the following manner:—Towards night-fall, people watch the last flight of the capercailzie before they go to roost. The direction they have taken into the forest is then carefully marked, by means of a prostrate tree, or by one which is felled especially for the purpose. After dark, two men start in pursuit of the birds: one of them is provided with a gun, the other with a long pole, to either end of which a flambeau is attached. The man with the flambeau now goes in advance, the other remaining at the prostrate tree, to keep it, and the two lights in an exact line with each other; by this curious contrivance they cannot well go astray in the forest. Thus they proceed, occasionally halting, and taking a fresh mark, until they come near to the spot where they may have reason to suppose the birds are roosting. They now carefully examine the trees; and when they discover the objects of their pursuit, which are said stupidly to remain gazing at the fire blazing

beneath, they shoot them at their leisure. Should there be several capercailzies in the same tree, however, it is always necessary to shoot those in the lower branches in the first instance; for, unless one of these birds falls on its companions, it is said the rest will never move, and, in consequence, the whole of them may be readily killed."

There is another fine European grouse, somewhat allied to the capercailzie, *Tetrao medius* of Meyer; the Rakkelhan of the Germans. It is chiefly found in the north of Russia, Sweden, and Courland. In size it is scarcely inferior to the first, being, according to Temminck, two feet three, four, and five inches in length. The same author describes this bird as having also lengthened plumes upon the head and throat, which are raised during the love-season, or upon any irritation. The head, neck, and breast are rich black, with purple and bronzed reflections. The back and rump are black, but the feathers are terminated with a violet reflection, and each is marked with minute pale dotings. The belly is black, with some dashes of white on the centre. The scapulars and lesser wing-coverts are deep brown, marked with delicate yellowish irregular waves. The secondaries are white from their base for half their length, than brownish-black, and terminated with a tip of white. The tail very slightly forked, and upper coverts are black, the under coverts tipped with white. The female has nearly the same distribution of the plumage with the former species. Both species extend

into Asia, but are entirely different from any of the species on the American continent, which we shall next notice.

The first of the American birds coming nearest in size and form to those we have been just describing, is the Dusky Grouse, *Tetrao obscurus* of Say, which was first noticed to science by that gentleman in his description of the various productions, the reward of the expedition to the Rocky Mountains. Bonaparte figured his specimen a female; and in this country two beautiful representations of both sexes appeared in the Northern Zoology. It is known to inhabit the Rocky Mountains from latitude 40° to 64°. In length it is about two feet; and the plumage exhibits the beautiful glossy tints of the others, mixed with grey and white.

The next of the American grouse which we have to notice is

TETRAO CANADENSIS. The Canadian Grouse.

Roy. Roy. U. Museum.

THE CANADIAN GROUSE.

Tetrao Canadensis.—LINNÆUS.

PLATE XV.*

Tetrao Canadensis, *Bonaparte's Continuation.*—Variety, *North. Zool.* ii. pl. 61.

THE figure of this species is taken from a specimen in the Edinburgh Museum, and from the distribution of the colouring, strongly resembles the markings of the variety dedicated to Captain Franklin as distinct. Among several of the lesser grouse, there is a certain variety in the tints and distribution of the plumage; and during the breeding season, and at the different ages, these become very different indeed. On these accounts, we do not consider that sufficiently distinctive marks have yet been assigned to the birds which have been designated *T. Canadensis* and *Franklinii.*

The entire length is about seventeen inches. It is common in Hudson's Bay through the whole year. It inhabits Canada in winter, and abounds on the Rocky Mountains. "The favourite haunts of the spotted or Canada Grouse," writes Bonaparte, "are pine woods and dark cedar swamps, in winter resorting to the deep forests of spruce, to feed on the tops and leaves of these evergreens, as well as on the seeds contained in their cones, and upon juniper berries. Hence their flesh, though at all times good,

* This Plate comes before Plate XIV. which faces p. 127.

is much better in summer, as in winter it has a strong flavour of spruce. At Hudson's Bay, where they are called indifferently Wood or Spruce Partridge, they are seen throughout the year. Like other grouse, they build on the ground, having perhaps fewer eggs; these are varied with white, yellow and black. They are easily approached, being unsuspicious, by no means so shy as the common ruffed grouse, and are killed or trapped in numbers, without much artifice being necessary for this purpose. When much disturbed, like their kindred species, they are apt to resort to trees, where, by using the precaution of always shooting the lowest, the whole of the terrified flock may be brought down to the last bird." Mr Douglas says that they (the var. *Franklinii*) are the most common birds in the valleys of the Rocky Mountains from 50° to 60°, and that some small troops are found in the higher mountains, which form the base of the snowy peaks. The alarm-note is two or three hollow sounds, ending in a yearning disagreeable grating note, like the latter part of the call of the Guinea fowl. The male is represented on the accompanying plate; the female is smaller, more varied, with less of black, and more of dusky; the upper parts are confusedly mottled with dull rusty orange and grey. The sides of the head, throat, and all the neck below, are dull rusty brown, each feather varied with black; on the lower part of the breast the black bands are broad and very deep, alternating equally with rusty orange.

Our next bird is—

The Ruffed Grouse.
TETRAO UMBELLUS

THE RUFFED GROUSE.

Tetrao umbellus.—LINNÆUS.

PLATE XIV.

Tetrao umbellus, *Linnæus.*—*Northern Zool.*—Ruffed Heath-cock, *Edwards.*—Bonasia umbellus, *Bonaparte.*—Ruffed Grouse, *Wilson, Audubon.*

THIS curious and beautiful grouse is found from the 56° parallel to the Gulf of Mexico. It is common in Pennsylvania and the United States, and very abundant in the Kentucky and Indiana territory, and it was found on the banks of the Saskatchewan by the Northern expedition, frequenting the horse-paths and cleared spaces about the forts. The following account of the manners of this bird, given by Alexander Wilson, will be acceptable:—

"The manners of the pheasant are solitary; they are seldom found in coveys of more than four or five together, and more usually in pairs, or singly. They leave their sequestered haunts in the woods early in the morning, and seek the path or road, to pick up gravel, and glean among the droppings of the horses. In travelling among the mountains that bound the Susquehanna, I was always able to furnish myself with an abundant supply of these birds every morn-

ing without leaving the path. If the weather be foggy, or lowering, they are sure to be seen in such situations. They generally move along with great stateliness, their broad fan-like tail spread out in the manner exhibited in the drawing. The drumming, as it is usually called, of the pheasant, is another singularity of this species. This is performed by the male alone. In walking through solitary woods, frequented by these birds, a stranger is surprised by suddenly hearing a kind of thumping very similar to that produced by striking two full-blown ox-bladders together, but much louder; the strokes at first are slow and distinct, but gradually increase in rapidity, till they run into each other, resembling the rumbling sound of very distant thunder, dying away gradually on the ear. After a few minutes' pause, this is again repeated, and, in a calm day, may be heard nearly half a mile off. This drumming is most common in spring, and is the call of the cock to his favourite female. It is produced in the following manner:—The bird, standing on an old prostrate log, generally in a retired and sheltered situation, lowers his wings, erects his expanded tail, contracts his throat, elevates the two tufts of feathers on the neck, and inflates his whole body, something in the manner of the turkey cock, strutting and wheeling about with great stateliness. After a few manœuvres of this kind, he begins to strike with his stiffened wings in short and quick strokes, which become more and more rapid until they run into each

other, as has been already described. This is most common in the morning and evening, though I have heard them drumming at all hours of the day. By means of this, the gunner is led to the place of his retreat; though, to those unacquainted with the sound, there is great deception in the supposed distance, it generally appearing to be much nearer than it really is."

The Prince of Musignano has formed a new genus for the reception of this bird, under the title *Bonasia*. The principal distinctions are the unplumed tarsi, contrasted with *Tetrao* and *Lagopus*. It is also remarkable for the tufts of feathers springing from each side of the neck, twenty-nine or thirty in number, of a deep rich black. These it can raise at pleasure, and uncover two bare patches of naked-looking skin, which during the drumming noise are distended and as it were blown up. The length of the bird is about 18 inches, and the whole plumage is a beautiful mixture of brown chestnut and grey, relieved by the black tufts upon the neck, and a broad band of the same colour at the extremity of the tail. The female, according to Audubon, is generally of a lighter colour than the male; the ruff, though present, being smaller and of a duller black. The nest is made by the side of a prostrate tree or at the foot of a low bush, composed of dried leaves and herbaceous plants. From five to twelve eggs are laid, which are of a uniform dull yellowish colour.

In America this bird is termed the pheasant, and

is one of the best game of the country, only excelled by the pinnated grouse, which we shall immediately notice. In winter and fall many hundreds are brought to the markets, and in Philadelphia, in Wilson's time, they sold at from three quarters of a dollar to a dollar and a quarter per pair.

THE PINNATED GROUSE.

Tetrao cupido.—LINNÆUS.

Attagan Americana, *Brisson.*—Tetrao Cupido, *Bonaparte, Synop.*—Pinnated Heathcock, *Stephens.*

THIS curious bird resembles the last in having tufts to the sides of the neck, the form of the feathers narrower and almost 3 inches in length. It frequents the dry open plains, studded with trees or interspersed with patches of brushwood. New Jersey, Pennsylvania, Kentucky, Indiana territory, and the plains on the Columbia, are all recorded by Wilson as the favourite resorts for this grouse. In the cultivated and populous districts, it is, however, rapidly decreasing, and though laws were enacted for the preservation of the heath hens, they flee before the settlers, and are certain ere long to be extirpated from grounds where they formerly abounded. The pinnated grouse is as large as the last. The general colour of the plumage is yellowish-red, with bars and crossings of black, in distribution much

similar to the colours and markings of the European grey hen. The remarkable parts of its adornment are the neck tufts, or, as Wilson terms them, supplemental wings, composed of about eighteen narrow feathers, the largest of which are 5 inches long, and black. Under each of these are two loose, pendulous, and wrinkled skins, extending along the side of the neck for two-thirds of its length, each of which, when inflated with air, resembles in bulk, colour, and surface, a middle-sized orange. The female is considerably less, and wants the neck tufts and naked skin.*

It is during the season of spring that the skins on the sides of the neck become most conspicuous. An interesting account of their manners at this season, is given in a letter from Mr Mitchell, New York, to Wilson.

"The season for pairing is in March, and the breeding time is continued through April and May. Then the male grouse distinguishes himself by a peculiar sound. When he utters it, the parts about the throat are sensibly inflated and swelled. It may be heard on a still morning for three or four miles; some say they have perceived it as far as five or six. This noise is a sort of ventriloquism. It does not strike the ear of a bystander with much force, but impresses him with the idea, though produced within a few rods of him, of a voice a mile or two distant. This note is highly charac-

* Alexander Wilson.

teristic. Though very peculiar, it is termed *tooting*, from its resemblance to the blowing of a conch or horn from a remote quarter. The female makes her nest on the ground, in recesses very rarely discovered by men. She usually lays from ten to twelve eggs. Their colour is of a brownish, much resembling those of a guinea hen. When hatched, the brood is protected by her alone. Surrounded by her young, the mother bird exceedingly resembles a domestic hen and chickens. She frequently leads them to feed in the roads crossing the woods, on the remains of maize and oats contained in the dung dropped by the travelling horses. In that employment they are often surprised by the passengers. On such occasions the dam utters a cry of alarm. The little ones immediately scamper to the brush; and while they are skulking into places of safety, their anxious parent beguiles the spectator by drooping and fluttering her wings, limping along the path, rolling over in the dirt, and other pretences of inability to walk or fly.

"During the period of mating, and while the females are occupied in incubation, the males have a practice of assembling, principally by themselves. To some select and central spot, where there is very little underwood, they repair from the adjoining district. From the exercises performed there, this is called a *scratching place*. The time of meeting is the break of day. As soon as the light appears, the company assembles from every side,

sometimes to the number of forty or fifty. When the dawn is past, the ceremony begins by a low tooting from one of the cocks. This is answered by another. They then come forth one by one from the bushes, and strut about with all the pride and ostentation they can display. Their necks are incurvated; the feathers on them are erected into a sort of ruff; the plumes of their tails are expanded like fans; they strut about in a style resembling, as nearly as small may be illustrated by great, the pomp of the Turkey Cock. They seem to vie with each other in stateliness; and, as they pass each other, frequently cast looks of insult, and utter notes of defiance. These are the signals for battles. They engage with wonderful spirit and fierceness. During these contests they leap a foot or two from the ground, and utter a cackling, screaming, and discordant cry.

"They have been found in these places of resort even earlier than the appearance of light in the East. This fact has led to the belief that a part of them assemble over night. The rest join them in the morning. This leads to the farther belief that they roost on the ground. And the opinion is confirmed by the discovery of little rings of dung, apparently deposited by a flock which had passed the night together. After the appearance of the sun they disperse.

"These places of exhibition have been often discovered by the hunters; and a fatal discovery it has

been for the poor Grouse. Their destroyers construct for themselves lurking holes made of pine branches, called *bough houses*, within a few yards of the parade. Hither they repair with their fowling-pieces, in the latter part of the night, and wait the appearance of the birds. Watching the moment when two are proudly eyeing each other, or engaged in battle, or when a greater number can be seen in a range, they pour on them a destructive charge of shot. This annoyance has been given in so many places, and to such extent, that the Grouse, after having been repeatedly disturbed, are afraid to assemble. On approaching the spot to which their instinct prompts them, they perch on the neighbouring trees, instead of alighting at the scratching place. And it remains to be observed, how far the restless and tormenting spirit of the marksmen may alter the native habits of the Grouse, and oblige them to betake themselves to new ways of life.

"They commonly keep together in coveys, or packs, as the phrase is, until the pairing season. A full pack consists, of course, of ten or a dozen. Two packs have been known to associate. I lately heard of one whose number amounted to twenty-two. They are so unapt to be startled, that a hunter, assisted by a dog, has been able to shoot almost a whole pack, without making any of them take wing. In like manner, the men lying in concealment near the scratching places have been known to discharge several guns before either the report of the explosion,

or the sight of their wounded and dead fellows, would rouse them to flight. It has farther been remarked, that when a company of sportsmen have surrounded a pack of Grouse, the birds seldom or never rise upon their pinions while they are encircled; but each runs along until it passes the person that is nearest it, and then flutters off with the utmost expedition."

THE SHARP-TAILED GROUSE.

Centrocercus phasianellus—SWAINSON.

PLATE XVI.*

Tetrao phasianellus, *Buonaparte's Continuation of Wilson.* —Long-Tailed Grouse, *Edwards.*—Sharp-Tailed Grouse, *Pennant.*—Centrocercus phasianellus, *Northern Zoology.*

THE two following specimens are remarkable for the elongated form of the tail, and have been placed by Mr Swainson, as the scantorial forms of the family, particularly the next bird, where the feathers are rigid and sharp pointed, and almost bare at the tips. The present bird, though previously hinted at by several authors, appears never to have been authentically known or described, until after the return of Say from the Rocky Mountain expedition; but the best description is given by Bonaparte in his continuation, who has also figured the female.

It is common in the southern parts of the Hudson Bay settlements. According to the Northern Zoology, the most northern limit is the Great Slave Lake, 65° parallel, and its most southern recorded station, 41° on the Missouri. It abounds on the out-

* The generic name upon the Plate was engraved by mistake.

TETRAO PHASIONELLUS (The Sharp-tailed Grouse)

Native of N. America

skirts of the Saskatchewan plains, and is found throughout the woody districts of the fur countries, haunting open glades and low thickets on the borders of lakes *.

Buonaparte thus details their manners. " The Sharp-tailed Grouse is remarkably shy, living solitary, or by pairs during summer, and not associating in packs till autumn; remaining thus throughout the winter. They, of choice, inhabit what are called the juniper plains, keeping among the small juniper bushes, which constitute their food. They are usually seen on the ground, but when disturbed fly to the highest trees. Their food in summer is composed of berries, the various sorts of which they eagerly seek: in winter they are confined to the buds and tops of evergreens, or of birch and elder, but especially poplar, of which they are very fond. They are more easily approached in autumn than when they inhabit large forests, as they then keep alighting on the tops of the tallest poplars, beyond the reach of an ordinary gun. When disturbed in that position, they are apt to hide themselves in the snow; but Hearne informs us, that the hunter's chance is not the better for that, for so rapidly do they make their way beneath the surface, that they often suddenly take wing several yards from the spot where they entered, and almost always in a different direction from that which is expected.

" Like the rest of its kind, the sharp-tailed grouse

* Northern Zoology.

breeds on the ground, near some brushwood, making a loose nest of grass, and lining it with feathers. Here the female lays from nine to thirteen eggs, which are white, spotted with blackish. The young are hatched about the middle of June; they utter a piping noise, somewhat like chickens. Attempts have been repeatedly made to domesticate them, but have as constantly failed, all the young, though carefully nursed by their step-mother, the common hen, dying one after another, probably for want of suitable food. This species has several cries: the cock has a shrill crowing note, rather feeble; and both sexes, when disturbed, or whilst on the wing, repeat frequently the cry of *cack, cack*. This well known sound conducts the hunter to their hiding place, and they are also detected by producing with their small, lateral, rigid tail-feathers, a curious noise, resembling that made by a winnowing fan. When in good order, one of these grouse will weigh upwards of two pounds, being very plump. Their flesh is of a light brown colour, and very compact, though, at the same time, exceedingly juicy and well tasted, being far superior in this respect to the common ruffed, and approaching in excellence the delicious pinnated grouse.

The adult male is about sixteen inches in length. The general colour a mixture of white, different shades of dark and light chestnut, on a rather deep and glossy blackish ground. The tail is composed of eighteen feathers, the centre ones, according to

Bonaparte, exceeding the others only by an inch. Between the sexes there is almost no difference in plumage; the female is merely less bright and glossy, the size is however somewhat less.*

* Bonaparte.

THE COCK OF THE PLAINS.

Centrocercus urophasianus—SWAINSON.

PLATE XVII.

Cock of the Plains, *Lewis and Clark.*—Tetrao urophasianus, *Bonaparte, Continuation*, pl. xxi.—Pheasant-tailed grouse, *Wilson, Illust. of Zool.* pls. xxvi. and xxvii.—Centrocercus urophasianus, *North. Zool.* ii. p. 353.

THIS splendid bird is the largest of the American grouse; and, as far as beauty, size, and rarity are concerned, bears the same rank in the American Fauna with the wood-grouse or cock of the wood of Europe. He is equally sought after by the huntsman, and is even now as difficult to procure as that we have just compared him to. But the form and abits are quite distinct. In our once native bird the form is remarkably powerful, the tail rounded and very ample, the habitation, the most extensive forests, delighting to perch on the highest trees. The bird of America inhabits only the uncovered plains, never perches, and the form of the tail is lengthened, the feathers narrowing to a point. This acquisition to the grouse was first noticed in the expedition of Lewis and Clark, who met with it near the fountain of the Missouri, in the heart of the Rocky

J. Stewart del.
(The Cock of the Plains.)
CENTROCERCUS UROPHASIANUS.
Edwd Lear
Lizars sc.

Mountains, and also on the Columbia River. A figure was first given of it by Bonaparte, from a specimen in the possession of Mr Leadbetter. Both sexes were again figured in Mr Wilson's Illustrations of Zoology, and an excellent representation of the male is given in the Northern Zoology.

The total length of the male is thirty-one and a half inches, that of the female twenty-two. The colour of the plumage is a beautiful mixture of yellowish-brown, mottled and varied with deeper tints, the under parts nearly white, with longitudinal streaks of brown, and the centre of the belly dotted with large black patches. On each side of the breast are two round naked protuberances, placed farther forward than those of *T. cupido*, or pinnated grouse. Above each there is a tuft of feathers, having their shafts considerably elongated, naked, and tipped with black radii. On the sides of the neck and across the breast, below the protuberances, the feathers are short, rigid, and sharp-pointed, but lie over each other with the same regularity as the scales of a fish. The tail is eleven inches long, each feather lanceolate, and is gradually attenuated to a fine point. The female has the whole of the upper plumage umber-brown and yellowish-white, barred or mottled in equal proportions. Under part nearly as in the male, but without the projecting stiff feathers.

The description of the manners of this species by Mr Douglass, is the best account we yet have. "The flight of these birds is slow, unsteady, and affords but little amusement to the sportsman. From

the disproportionately small, convex, thin-quilled wing,—so thin, that a vacant space half as broad as a quill appears between each,—the flight may be said to be a sort of fluttering, more than any thing else: the bird giving two or three claps of the wings in quick succession, at the same time hurriedly rising then shooting or floating, swinging from side to side, gradually falling, and thus producing a clapping, whirring sound. When started the voice is *cuck, cuck, cuck*, like the common pheasant. They pair in March and April. Small eminences on the banks of streams are the places usually selected for celebrating the weddings, the time generally about sunrise. The wings of the male are lowered, buzzing on the ground, the tail spread like a fan, somewhat erect, the bare yellow œsophagus inflated to a prodigious size, fully half as large as his body, and, from its soft membranous substance, being well contrasted with the scale-like feathers below it on the breast, and the flexile silky feathers on the neck, which on these occasions stand erect. In this grotesque form he displays, in the presence of his intended mate, a variety of attitudes. His love-song is a confused grating, but not offensively disagreeable tone—something that we can imitate, but have a difficulty of expressing—'*Hurr-hurr-hurr-r-r-r-hoo*,' ending in a deep hollow tone, not unlike the sound produced by blowing into a large reed. Nest on the ground under the shade of *Purshia* and *Artemisia*, or near streams, among *Phalaris arundinacea*, carefully constructed of dry grass and slender twigs. Eggs from thirteen to seventeen,

about the size of a common fowl, of a wood-brown colour, with irregular chocolate blotches on the thick end. Period of incubation from twenty-one to twenty-two days. The young leave the nest a few hours after they are hatched." "In summer and autumn months these birds are seen in small troops, and in winter and spring in flocks of several hundreds. Plentiful throughout the barren, arid plains of the river Columbia; also in the interior of North California. They do not exist on the banks of the river Missouri; nor have they been seen in any place east of the Rocky Mountains."

GROUSE-PTARMIGAN.

We now come to that section of the Grouse to which the Red Grouse and Ptarmigan belong. They have been separated from the others under the title of *Lagopus*—Grouse-Ptarmigan. They are even of a more solitary nature than the others, inhabiting the wildest muirs or most barren alpine ranges. The principal generic distinction is the entirely clothed feet and legs, covered with a rather rigid hair than feathers, and the want of the scaling upon the sides of the toes; the hind toe short, and the claws long and of a particular flat triangularly pointed form in the more alpine birds, to assist in digging or burrowing under the snow. Five species only are known, natives of North America and Europe. Great Britain possesses three, one of which is not known out of the British Isles. It is the first we shall notice—

LAGOPUS SCOTICUS.

(The Red Grouse.)

Native of Britain.

THE RED GROUSE.

Lagopus Scoticus.—LEACH.

PLATE XVIII.

Red Grouse, Muirfowl of British Ornithologists.—Tetrao Scoticus, *Auctorum.*—Lagopus Scoticus, *Leach.*

THE Muirfowl, the delight of the sportsman, may be placed at the head of the sports of the fowler; it is to him what the fox is to the hunter, the salmon to the fisher. The light air of the early morning of a fine *twelfth*, and the free and open almost unbounded prospect, exhilarate the spirits; while the boldness of the game upon discovery, erectly uttering his cry of warning to his brood,—his vigorous lengthened flight, so long as to create doubts of his being again seen,—carry with them a continuation of excitement, long after it is satiated with following the skulking black game, or the more rural amusement of walking up partridges. But independent of this claim upon the sportsman, it has another: the red grouse is exclusively confined to the British Islands, and has never been found on any part of the Continent, and it would be much to be regretted if unlimited persecution or want of preservation should in after years exterminate this bird, so exclusively national

It is well known that on all the more southern muirs, not a tenth of the former number of birds at present exist;* and it is only in the more remote districts, where access and accommodation for sportsmen are in some degree wanting, that they are to be seen in any thing like their former numbers.

The red grouse is plentiful still in Scotland and Ireland, now more sparingly spread over the southern districts of the former, and upon the wilder muirs of England. There also the habits of the birds have considerably changed. By the approaches of cultivation to the higher districts, and in insulated patches of grain even in the middle of the wildest, the grouse have learned to depend on the labours of the husbandman for his winter's food, and instead of seeking a more precarious subsistence during the snow, of tender heath-tops or other mountain plants, they migrate to the lower grounds and enclosures, and before the grain is removed, find a plentiful harvest. Hundreds crowd the *stooks* in the upland corn-fields where the weather is uncertain, and the grain remains out even till December snows; while in the lower countries they seek what has been left on the stubble or ploughed fields. It is only in the wildest parts of the Highlands, the Cairngorum range, Ross, or Sutherland, where the grouse is an inhabitant through the year, of the muirs, his native pasture, and where

* In former days, the Earl of Strathmore's gamekeeper, for a considerable bet, undertook to shoot forty brace of game upon his Lordship's muirs in Yorkshire. By two o'clock he had killed forty-three brace.

he is also nearly the only enlivener of these wild solitudes, by his loud morning and evening call. During summer it may be varied by the whistle of the curlew or the wailing of the golden plover, or perhaps interrupted by the sailing flight of some harrier or other birds of prey; but in winter, for leagues around,

"Dwells but the gor-cock and the deer."

Unless where much disturbed, the grouse is not a wild bird, and, unaware of danger, it will allow a person to approach or walk past, uttering only its call, as if to make its companions aware that something is near. In districts where they are much followed, they, however, become one of the most wild and wary of our game, and almost impossible to be approached except by stratagem. For nearer concealment they are amply provided by the similarity of the tints of their plumage with the dark brown moss and heath, and except for the assistance of the pointer, could not be discovered. Unlike the large true grouse, the birds of the present group all pair and continue with their broods until a return of the warm season. The young in some seasons are dreadfully ravaged by the tapeworm, almost destroying them entirely in the districts where it occurs. It is their most severe natural enemy. The red grouse pairs very early, if mild, in January, and the female commences laying at the end of March. The eggs are deposited in a shallow hollow at the foot of some tuft of heath, which affords a partial covering and shelter, and only a few straws or grasses serve to separate them from the ground. Both parents attend.

and boldly defend the nest or young from the ordinary aggressors. One of the most dangerous for the eggs is the common carrion crow or corby, but this is often attacked in return and successfully beaten off. In confinement they very easily tame and become familiar, and have even bred, though I believe the young, after being hatched, have very rarely been reared.

The adult plumage of the grouse which have attained an age beyond a year or two, is a deep rich sienna brown, the belly almost entirely black. Many specimens are much marked with white on the under parts, and some to a greater degree than others; and it is a usual thing to remark of these birds, where the colours are so richly contrasted, "What a fine *old* bird he is." The reverse, however, is the truth, for though white is so often the attribute of age, it is in this case most prevalent upon the young males. The females are of a paler tint, and have the markings larger. During the breeding season, the feathers of both become much more cut into, as it were, with yellow, and their tips are pale yellowish white. The grouse varies occasionally to different shades of cream colour, but we are not aware of any specimens being perfectly white.

Another grouse, very nearly resembling the moorfowl of Britain, is the Willow Grouse, *Lagopus saliceti*, inhabiting the arctic parts of North America, and extending from thence to the north of Europe. The plumage of the summer is extremely similar to the red grouse, but that of the winter is entirely white. The

entire length is about sixteen inches, the weight about one and a half pounds.

According to Dr Richardson, the Willow Grouse is partially migratory in the fur countries; it breeds in the valleys of the Rocky Mountains, and, collecting in flocks on the approach of winter, retires southward as the severity of the weather increases. On the shores of Hudson's Bay, it assembles in vast flocks during winter, 10,000 being sometimes captured in a single season. Greenland, Iceland, and the valleys of the Alps, are almost their only habitations in the old world, frequenting rather wet and brushy situations. In America, they shelter themselves among the thickets of willow and dwarf birch. They pass the night in holes in the snow, and when perceived, practise a novel artifice in attempting to escape; they often terminate their flight by diving precipitately into the loose snow, working their way with considerable celerity beneath its surface.

The next bird we shall notice is

THE COMMON PTARMIGAN

Lagopus mutus—Leach.

PLATE XIX. Plumage of Winter.—XX. Young.

Tetrao lagopus, *Linnæus.*—Ptarmigan, *Pennant, Latham.*—White Grouse, *Bewick's Birds.*—Common Ptarmigan, *Selby's Illustrations*, lix. and lxix. p. 433.

This delicately marked bird in its summer dress, and of snowy whiteness in winter, appears also to be a native of both the European and American continents, though it is certainly more abundant in the former. It is a species confined to the most alpine districts, and may be said to be very generally spread over those of Europe. In Great Britain, its only habitation now seems to be the high mountain ranges in the middle of Scotland, increasing in abundance as the same kind of wild country reaches to the north, and it also extends to the Hebrides. According to Pennant, and some contemporary writers, these birds were once found on the hills of Westmoreland and Cumberland; and, I believe, recollections even exist of a few having been seen upon the high ranges which appear on the opposite border of Scotland. These have been for some time extirpated, and unless a few so-

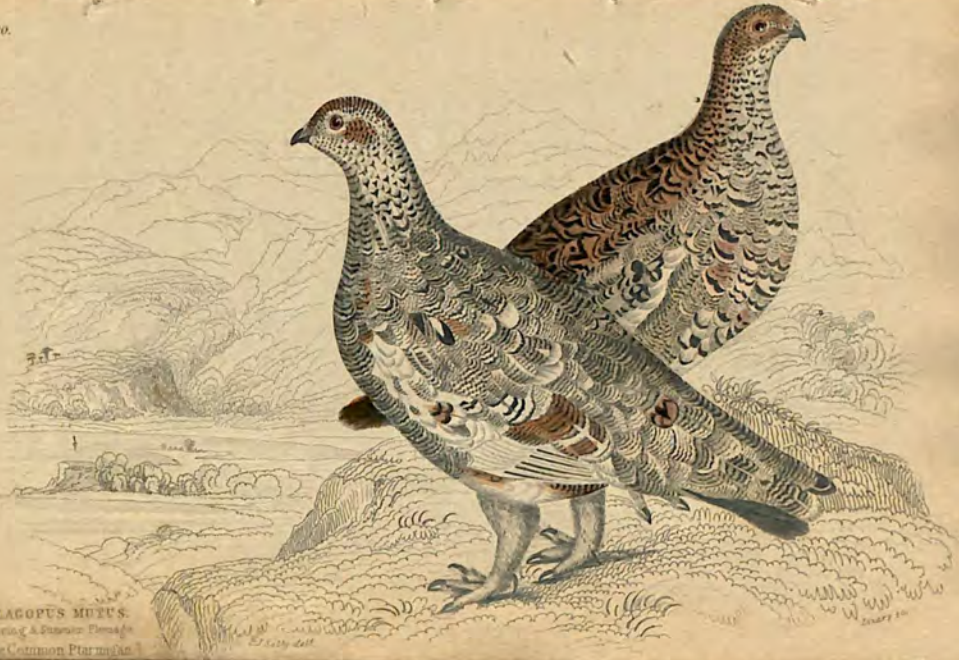
PLATE XIX.

(The Common Ptarmigan.)

LAGOPUS MUTUS.

Winter Plumage

Birds of Britain



LAGOPUS MUTUS.
Spring & Summer Plumage
(The Common Ptarmigan.)

litary pairs remain on Skiddaw, or some of its precipitous neighbours, the range of the Grampians will be its most southern British station. Another bird has lately been found in this country, which was before thought to be an inhabitant of America only, the Lagopus rupestris or Rock Ptarmigan. From its close resemblance in plumage, it has been confounded with the common ptarmigan; but one or two specimens have lately been got in the more northern Highland districts. In both birds the plumage is of the most unsullied white during winter. In summer they are mottled with tints of black; in the first mingled with grey and yellow, in the second with yellow alone. The size varies also, the last being about two inches less than the Common Ptarmigan. The chief distinctions to be seized upon at first sight, are the less size, and the black feathers of the back being cut into upon the edges, with patches of yellow only, contrasted with the larger size and grey plumage of the other.

They inhabit the most barren and rocky spots, often where nothing is to be seen but an interminable series of rugged rocks distributed in boulder masses, varying in size, from huge lumps to pieces of a few inches in diameter. Here, during spring and summer, the pairs and their broods remain the only inhabitants, and are discovered with the greatest difficulty, the mixture of the colours of the plumage forming a tint which harmonizes with that of the grey rocks around. At this season they are also tame and familiar, running before the intruder, and uttering their peculiarly low wild call which is

often the means of their discovery. In this way they will often reach the opposite edge of the rock, and will, as it were, simultaneously drop off; but the expectation of finding them on some lower ledge will be disappointed, for they have perhaps by that time sought for and reached the opposite side of the mountains, by a low, wheeling flight, as noiseless as the solitudes by which they are surrounded. The nest is made under the rocks and stones, and is very difficult to be found, for the female on perceiving a person approach, generally leaves it, and is only discovered by her motion over the rocks, or her low clucking cry. In winter they descend lower, but seldom seek the plains.

The only other bird belonging to this interesting group is an American species, discovered by the expedition under Captain Franklin. It has the habits of the rest, and inhabits the Rocky Mountains. It has been termed by Dr Richardson *Lagopus leucurus*, or White-tailed Ptarmigan, and is at once distinguished from any of the rest by the want of black on the pure winter plumage, wanting both the black eye-stripe and black tail, so conspicuous in the others. The summer dress is intermediate in colour between that of the rock and common ptarmigan.

(The Common Black Grouse.)

LYRURUS TETRIX.

Male.

TETRAO TETRIX. Female. The Common Black Grouse.

THE COMMON BLACK GROUSE.

Lyrurus tetrix.—SWAINSON.

PLATE XXI. MALE.—PLATE XXII. FEMALE.

Tetrao tetrix, *Linnæus.*—Black Grouse, Black Cock, Male; Grey Hen, Female, *Pennant*, &c.—Black Grouse, *Selby, Illustrations*, lviii. and lviii.* p. 423.

THE most proper place to have described this beautiful bird was after the true American grouse, the ptarmigan being more naturally succeeded by the next Plate (Pl. XXIII.) As it is, it has been placed here, and we must refer to the conclusion for the situation of the different groups.

This species is pretty generally spread over Europe, being found in France and Germany, while, as we reach the north, in Russia, Sweden, Norway, &c. it becomes very abundant. In Britain it occurs in the three countries, most sparingly, however, in England, from the rich cultivation and champagne character of the country. The New Forest, Hampshire, Somerset, and the wild parts of Staffordshire, can boast of it, but these are nearly all the English stations, until we reach the borders, where it becomes abundant in the wild districts, which conduct to its still more frequent haunts in Scotland,

The favourite abode of the black grouse is an alpine sheep country, where there is comparatively little heath, moist flats or meadows, with a rank and luxuriant herbage, and where the glades or passes among the hills are clothed with natural brush of birch, hazel, willow, and alder, and have a tangled bottom of deep fern. These afford both an abundant supply of food, and shelter from the cold at night, and from the rays of the mid-summer's sun.

Like the greater proportion of the true grouse, the black game is polygamous; and during the months of January, February, and March, when his adult breeding plumage of glossy steel-blue is put on, he is a noble-looking and splendid bird. In the warmer sunny days at the conclusion of winter and commencement of spring, the males after feeding may be seen arranged, on some turf fence, rail, or sheep-fold, pluming their wings, expanding their tails, and practising, as it were, their murmuring love-call. If the weather now continues warm, the flocks soon separate, and the males select some conspicuous spot, from whence they endeavour to drive all rivals, and commence to display their arts to allure the female. The places selected at such seasons are generally elevations; the turf enclosure of a former sheep-fold which has been disused, and is now grown over, or some of those beautiful spots of fresh and grassy pasture, which are every where to be seen, and are well known to the inhabitants of a pastoral district. Here, after perhaps many battles have been fought and rivals van-

quished, the noble full-dressed blackcock takes his stand, commencing at first dawn; and where the game is abundant, the hill on every side repeats the murmuring call, almost before the utterers can be distinguished. They strut around the spot selected, trailing their wings, inflating the throat and neck, and puffing up the plumage of those parts, and the now brilliant wattle above the eyes, raising and expanding their tail, displaying the beautifully contrasting white undercovers, and imitating, as it were, the attitudes of a little turkey-cock. He is soon heard by the females, who crowd around their lord and master.

This season of admiration does not long continue; the females disperse to seek proper situations for depositing their eggs, while the males, losing their feeling for love and fighting at the same time, reassemble in small parties, and seek the shelter of the brush and fern beds to complete a new moult, and are seldom seen except early in the morning, being now the very reverse in stupidity to what they were formerly in vigilance. The sexes continue separate until the winter, when the old males join with the young broods, and all resort, morning and evening, to some favourite feeding grounds, spending the middle of the day in basking, pluming, or sporting upon some sunny hillside. Upon the females devolve the whole duties of rearing and protecting the young. The nest is made on the ground like that of the other grouse, and when hatched the young are conveyed to the low rushy hollows, where

there is abundance of water, and plenty of food, in tender seeds of the rushes, and alpine grasses. The young are seldom full grown before the first of September; and even at this season, if they have been undisturbed previously, they will almost suffer themselves to be lifted from among the rank herbage before the pointers. At this time the plumage of the young is somewhat like that of the female, a lighter tint of yellowish-brown, mottled and crossed with bars of black, the males commencing to get the black feathers of the adult plumage, or to spot, as sportsmen term it; this is almost always completed by the beginning of October, but does not gain its richness of gloss and lustre before the following spring.

During summer the general food is the seeds of the various grasses, and the berries of the different alpine plants, such as the cran and crow berries, blaeberries, &c.*; and in winter the tender shoots of the fir, catkins of birch and hazel, afford them support in the wilder districts, and often give their peculiar flavour to the flesh; but in all the lower districts, where, indeed, this bird is most abundant, the gleaning of the stubble yields a plentiful meal. Fields of turnips or rape are also favourite feeding places, and the leaves yield them a more convenient supply of food during hard frost, than they could elsewhere provide. In some places flocks of hundreds

* Vaccinium oxycoccus, Empetrum nigrum, Vaccinium myrtillus, Vitis Idæa, and Arbutus Uva-ursi, are all sought after.

assemble at feeding times, for of late years this species has increased to an immense extent, and from the life of the hens being to a certain degree protected, a sufficient breeding stock is always kept up. At the season of their thus assembling in flocks, they are extremely shy and wary.

The plumage of the adult male is, on all the upper parts, of a rich steel-blue; on the under parts, pitch-black, which duller colour also is seen on the secondaries and wing-coverts. The secondaries are tipped with white, forming a bar across the wings conspicuous in flight, and the under-tail coverts are of the same pure colour. The form of the tail is, however, the most curious or anomalous structure in this bird, differing from all the others, (except one, where it is very slightly indicated,) in being forked, and having the feathers bending outward. From this circumstance, it has been formed into a subgenus by Swainson, under the title *Lyrurus*, and is made in that gentleman's system to represent the fissirostral form among the Tetraonidæ, bearing analogy in its forked tail and glossy plumage to the Drongo shrikes of Africa and India. The female bears the more unobtrusive colours which run through the sex in the rest of the group, and has a chaste and beautiful arrangement of brown, black, and greyish-yellow. The fork of the tail is very slightly seen.

From the Grouse and Ptarmigan we appear to arrive naturally at those birds which fill their situation in

the most barren districts of the world; and for abode there, they possess requisites equal to those belonging to the inhabitants of the moors or forest. These have been named Sand-Grouse, and in scientific language Pterocles. They inhabit the parched and arid deserts of Africa and Arabia, plains of burning sand, bounded only by the horizon, "where no palm-trees rise to spot the wilderness," themselves almost the only living creature, often proving a most welcome sight, to those who, from necessity or avarice, attempt their dangerous passage. For abode in these deserts, a more extended locomotive power is necessary, the distances to be passed from the various watering places and supply of food being very great. We find the feet small, therefore formed for running lightly on the burning sand, the bodies more light and slender than any of the birds we have been describing, and the wings lengthened, with the first quills longest; the tail also is often long, thus showing an extent of development in the most important organs of flight, far beyond any of the others. They are thus enabled to pass over vast distances, and they sweep over these wastes, with an easy, noiseless, and extremely rapid flight.

Swainson accounts these birds the tenuirostral group in this family, and as a departure from the Gallinæ. The Prince of Musignano remarks, that some species of them lay a small number of eggs, and that the young remain for a considerable time in the nest, after being hatched. The colours of

these birds are, peculiar shades of brown and ochreous yellow, assimilating with the colour of the deserts they inhabit.

The first we have to notice, is a European bird of great rarity. It is

PALLAS'S SAND-GROUSE.

Syrrhaptes Pallasii—Temminck.

PLATE XXIII.

Tetrao paradoxa, *Pallas.*—Heteroclite grouse, *Latham.*—Heteroclite Pallas, Syrrhaptes Pallasii, *Temminck, Pigeons et Gallinacés; Pl. Coloriées*, 95—*Delanoue, Dictionnaire Classique d'Histoire Naturelle*, viii. p. 182.

The entire length of this curious bird, figured by Temminck, was scarcely nine inches, of which the very long tail feathers occupy three; but the specimens procured by M. Delanoue from the borders of China, were above eleven inches, exclusive of the tail, which was above three. The colours of these birds were much more brilliant also, and he is of opinion that the subject of our plate was a young male of small size. The plumage is generally of the brownish yellow tint, the common colour of the whole; upon the back and wings of a clearer and more yellow tint than on the other parts. Across the lower part of the breast, the feathers have a black band at the tip, which forms a bar across; and upon the centre of the belly there is another broader band of brownish-black. The feathers on the back are

SYRRHAPTES PALLASSII (Pallas's Sand-Grouse.)

tipped also with a circle of black, and the secondaries are terminated with reddish-brown, forming a bar of that colour across the wings. The wings are long, the outer feather surpassing the others, and lengthened to a fine narrow point: in the same way are the centre feathers of the tail much extended beyond the others, and terminate in the same kind of narrow setaceous plume.

The feet of this bird are very extraordinary. According to Delanoue, who appears to be the only one who has seen them alive, the toes are so short as to be scarcely distinguishable, the centre one only deserving that appellation, and they are covered to the claws with thick down, these parts being alone observable without putting aside the covering. The consequence is a slow, and, as it were, painful manner of walking; while on the contrary, the flight is rapid and high. The same traveller found the nest of the female among some stones collected under a shrub, containing four eggs of a reddish-white spotted with brown. The nest was perfectly simple, constructed with only a few stalks of grass, and the female exhibited the utmost solicitude for her precious deposit. The female differs little from the male, except in size, and a little less brilliancy of plumage.

The genus Syrrhaptes was established by Illiger for the reception of this curious bird, and M. Temminck dedicated the only species yet known to the celebrated Pallas, its first describer. The next bird is more typical of this beautiful little group; it is

THE BANDED SAND GROUSE.

Pterocles arenarius.—TEMMINCK.

PLATE XXIV. FEMALE.—PLATE XXV. MALE.

Tetrao arenarius, *Pallas*.—Ganga unibande, Pterocles arenarius, *Temminck, Pig. et Gallinacés*, and *Pl. Coloriées*, pls. 52 and 53.

IN this beautiful sand-grouse, we see, if such an expression may be used, a more perfect form. The form of the bird is strong but light, the wings long and ample. The tarsi feathered only in front, and the feet evidently adapted for running. We have, however, the same prevailing colour of grey and yellowish-brown, of the peculiar opaque lustre which prevails among them. The belly of the male is deep brownish-black, the throat is marked with a spot of the same colour, and below the breast there is another similarly coloured band, from which Temminck has derived his trivial name. The female is of the same general tint. The dark parts of the under plumage are paler, and the patch on the throat is wanting, but apparently replaced by another of grey, while the head, breast, and upper parts are covered with brownish-black bars and crossings, somewhat akin to those which distinguish the females of the true grouse. The tail in this species

(The Banded Sand Grouse)
PTEROCLES ARENARIUS
Female

(The Banded Sand Grouse)
PTEROCLES ARENARIUS
Male

is rounded, but rather lengthened; it varies in length from twelve to fourteen inches.

The banded sand-grouse is found on the vast sandy plains in the south of the Russian empire, upon the banks of the Volga, but most abundantly in the north of Africa. Temminck also thinks that it is entitled to the rank of a European straggler, one or two instances having occurred of its being met with in Spain and Germany. Nauman killed one on the territory of Anhalt, and several others were said to have been found in the same season; Temminck possesses two specimens killed in Spain. The nest is made among stunted brush, upon the ground, and four or five eggs only are deposited. The principal food during the season is the seeds of an astragalus.

Pterocles exustus, coronatus, Lichtensteinii, are other delicately marked species, inhabiting the African deserts, and having nearly the same manners, while a beautiful species inhabiting India was made known by Sonnerat, under the name of Gelinote des Indes. The *Pterocles quadricinctus* of Temminck, is so named, from four bands of brown, white, black, and again white, which encircle the breast of the adult males.

Another interesting species is the pintailed sand-grouse, *Pterocles setarius* of Temminck, a native of Europe as well as Africa, and the only one which can be called really European. It is remarkable in the lengthened form of the centre tail-feathers, and

particularly so in the strong bill, (which forms a marked contrast with the others, which are all comparatively weak,) and approaches almost to the strength of that of the grouse, while the nostrils still remain uncovered. It is found in Spain and some of the southern provinces, and the north of Africa, frequenting, perhaps, more the Landes, where there is a greater proportion of herbage. The nest is made among loose stones or scanty herbage, and the eggs are only four or five in number.

The next birds we have to describe are, if possible, still more curious. In illustration of these, we have figured

(The Crowned Cryptonix) CRYPTONIX CORONATUS

THE CROWNED CRYPTONIX.

Cryptonix coronata.—Temm.

PLATE XXVI.

Le Rouloul de Malacca, *Sonnerat*, ii. p. 174, pl. 100.—Cryptonix ou Rouloul couronné, Cryptonix coronatus, *Temminck, Pl. Coloriées*, pls. 350 and 351.

This singular bird has been placed by ornithologists alternately among the pheasants, pigeons, and partridges. Its nearest alliance is perhaps to the last, but it differs from them in the form of the bill and nostrils, and from all the Tetraonidæ in the imperfection of the hallux, which wants the claw. It is further remarkable for the large naked space round the eyes, and for the ample tuft or crown of hairy-looking plumes which adorn the head. The form of the bird is compact and robust, the wings short and rounded, and the tail almost concealed by the feathers of the rump. It inhabits the forests of India, never visiting the plains, and is most frequently met with in Malacca, Java, Sumatra, &c.

The length of the male is about ten inches; the plumage of the upper parts, except the wings, head, and neck, is a deep olive-green; on the breast and under parts it becomes almost black or steel blue, and the head and neck are of that colour, with purple

reflections. The wings are umber brown, varied with a deeper tint. The crown and hind head are adorned with a lengthened crest of hair-like feathers, of an orange-red, but marked in front with a conspicuous band of white. Before this, at the base of the bill there springs a tuft of strong black hair or bristles, which curve backwards. The space surrounding the eyes, base of the bill, and legs, are bright red. The female has the plumage entirely of the green which covers the upper parts of the male, except the wings. On the forehead are the black hairs or bristles, but the red occipital crest is entirely wanting.

Cryptonix niger, entirely black, is another species belonging to this form, the female is brown. There appears also to be one or two other birds which will rank with these, which have not yet been properly distinguished. Our next birds compose the genus Ortygis of Illiger, and the form will be seen in

Lizars sc.

ORTYGIS MEIFFRENII.

(The White-spotted Ortygis.)

THE WHITE-SPOTTED ORTYGIS.

Ortygis Meiffrenii.—TEMMINCK.

PLATE XXVII.

White-spotted Turnix, *Swainson, Zool. Illust.*—Turnix Meiffeinii, *Temminck*, pl. 50.

THESE curious diminutive birds are found in Africa, India, and the warmer parts of New Holland. Few of them are so large as the common quail, and several do not attain half the size. The colours are somewhat similar; but in the form of the body—the length of uncovered leg above the joint, form of the foot in wanting entirely the hallux—reminds us of the true bustards. They inhabit the barren Landes, and the confines of the deserts, seldom taking wing except when pressed, and running with great swiftness. They are polygamous, and it is one of these birds which are so much used by the Malays, Javanese, and Chinese, in quail-fighting, which is carried to a much greater excess than the same practices in the cock-pit. The species represented on the accompanying plate, exhibits the peculiarity of form and length of legs. The bird itself is scarcely larger than the figure, the upper parts delicately shaded with yellowish white, the lower parts nearly pure white. By Mr. Swainson it had

been, (subsequently to Temminck, we think), named *nivosus*, from the white spots which delicately mark the breast. It is a native of Africa.

Our next bird is of stronger proportions. It is

NIGRICOLLIS. Black-necked Ortygis.

BLACK-NECKED ORTYGIS.

Ortygis nigricollis.

PLATE XXVIII.

Turnix cagnan, Hemipodius nigricollis, *Temminck, Pigeons et Gallinacés*, iii. p. 619.

THIS is a stronger species than the last, coming nearer to the true quails, being rather more than six inches in length. The head and neck are deep black, mingled above with white and brown, but upon the throat generally of a solid black. The upper plumage is varied with irregular markings of yellowish-brown and black, and the breast is largely barred with the latter colour upon a pale yellowish-brown ground. It inhabits the island of Madagascar, and most probably also the continent of Africa.

The next birds we have to notice are the last in this important and interesting family, but although they have been placed last, we are by no means certain of their situation. The Tinamous, forming the genus Crypturus of Illiger, are all natives of the New World, particularly abounding in the Brazilian and tropical forests, whose open glades they frequent during the day, and at night repose on the large

branches of the trees, seeking safety from the numerous carnivorous animals which hunt their prey during night, and delight in the varied game of these wilds. During day they skulk about the long herbage, and even when assailed by men, allow themselves to be killed with sticks, rather than exert their little powers of flight. The wings and tail are both short and without power, the latter almost wanting; but their feet are more fitted for running in the marshy grounds, and the disincumbrance of the tail enables them to thread an easy passage through a tangled herbage. The next Plate represents

CRYPTURUS RUFESCENS.
(The Gnazu.)

THE GUAZU.

Crypturus rufescens.

PLATE XXIX.

Tinamou isabelle, Tinamus rufescens, *Temminck, Planches Coloriées*, pl. 412.

THIS is a large bird, measuring in length above 15 inches. It is a native of Paraguay and Brazil, and is said to frequent the plains of deep grassy herbage, and to come forth in moonlight and twilight to the fields of newly sown grain. During day it is difficult to raise, and will allow itself almost to be trodden on. They are hunted with dogs, and somewhat esteemed for their flesh. The nest is formed among the long grass, and four or five eggs are laid, according to Temminck, of a brilliant violet colour, he form nearly round.

On the crown are rows of black spots upon the tips of the feathers; the ground colour, with that of the neck and breast, is a pale and delicate yellowish orange. The whole of the other parts, except the quills and secondaries, are of a delicate wood-brown, or, as Temminck expresses it, "couleur de café à

lait ;" palest beneath, and marked above with large black crescent-formed patches. The quills and secondaries are bright yellowish-orange.

The other species of the genus we have represented is—

CRYPTURUS TATAUPA.

The Tataupa.

THE TATAUPA.

Crypturus tataupa.

PLATE XXX.

Tinamou tataupa, Tinamus tataupa, *Temminok, Planches Coloriées*, pl. 415.

THIS bird is also a native of Paraguay, and has nearly the manners with the last, a little more familiarity is displayed, and it approaches commonly nearer to cultivation, whence it has received the provincial name of Tataupa. It breeds in similar places to the last, and the eggs are of a deep brilliant blue. Violet and blue are remarkable colours in the eggs of the gallinaceous birds, the former very rare among any, and the tinamous seem to lead off in this respect as well as many other peculiarities.

The Tataupa is a small species, being only about nine inches in length. The head, neck, breast, and belly are of a greyish leaden colour; the throat pure white, the back and wing-coverts brownish-black, the feathers on the thighs and rump are dull black, bordered with a narrrow band of white. The bill is brilliant red, and the legs are of a purplish-red, both contrasting well with the otherwise dull and chaste plumage.

Fourteen or fifteen species of these curious birds are described, but their history is not well known, and there is considerable confusion among their names, from the works of Spix affixing new appellations to almost all that were known. One of the most curious is the Tinamus nanus of Temminck, of very diminutive size, being about a third less than the common quail. It is very interesting from its form, which approaches in many respects to that of Ortygis, and is thought by Temminck to stand at the extremity of the present genus, and lead to that we have just mentioned. The hallux is simply a nail, and there is an extraordinary development in the feathers of the rump. It will stand as the type of a subgenus.

We now give a short arrangement of the genera which have been already proposed by different ornithologists. Those in capitals are what Mr Swainson considers the five leading forms, those in common letters are the subgenera, of which one or two more will be necessary in both Perdix and Crypturus.

The Rasores, or third order of birds, contains the families Pavonidæ, Tetraonidæ, Cracidæ, Struthionidæ, Columbidæ.

The family of Tetraonidæ contains the genera and subgenera

PERDIX.
- Francolinus.
- Ortyx.
- Coturnix.

TETRAO.
- Lyrurus.
- Centrocercus.
- Lagopus.
- Syrrhaptes.
- Pterocles.
- Attagis?

CRYPTONIX.

ORTYGIS.

CRYPTURUS.

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